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**DRAFT**

**Performance Work Statement**

**For**

**Expendable Launch Vehicle  
Integrated Support 2  
(ELVIS 2)**

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## 43 CONTRACT OVERVIEW

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1 The Expendable Launch Vehicle Integrated Support 2 (ELVIS 2) contract shall provide  
2 the National Aeronautics and Space Administration (NASA), Launch Services Program  
3 (LSP) with support services that are safe, reliable, and cost effective. The NASA LSP  
4 mission is to provide leadership and expertise in providing on-orbit, on-time, and cost  
5 effective launch services. This mission includes successful delivery of spacecraft to  
6 space, assuring launch services for customers, promoting the evolution of a competitive  
7 space market, and continually enhancing LSP core capabilities.

8  
9 The Contractor shall provide LSP Management Support, Safety and Quality, Launch Site  
10 Support Engineering, Technical Integration Services, Communications and Telemetry,  
11 VAFB Unique Support, Vehicle Engineering and Analysis, Facility  
12 Upgrade/Modification/Repair/Design and Construction, Special Studies, and Information  
13 Technology (IT) Support. Support shall be provided to the LSP and LSP supported  
14 activities including but not limited to multiple NASA programs, the Department of  
15 Defense (DoD), and other Government agencies and commercial launch activities. The  
16 Contractor shall provide services at the Kennedy Space Center (KSC), Cape Canaveral  
17 Air Force Station (CCAFS), Vandenberg Air Force Base (VAFB), and other launch sites  
18 as well as maintain a presence at commercial launch provider facilities.

19  
20 This Performance Work Statement (PWS) describes the tasks to be performed by the  
21 Contractor in terms of Government required outcomes and/or results. The Contractor will  
22 be expected to provide engineering, technical innovation, reliable systems to support  
23 launch and mission readiness, as well as day-to-day operational support for multiple  
24 concurrent users in a cost efficient manner. The Contractor will be expected to ensure the  
25 safety of the workforce and the public, provide proactive recommendations and solutions  
26 for mission success with flexible and responsive launch services, promote spacecraft  
27 customer satisfaction, and develop and maintain resilient innovative processes that  
28 support the evolving commercial space environment.

29  
30 The Contractor shall provide the management, integration, technical, business, and  
31 administrative functions required for balanced and sustained accomplishment of the  
32 contract requirements set forth herein. The Contractor shall perform these  
33 responsibilities in the most cost-effective and efficient manner possible.  
34

## 1.0 CONTRACT MANAGEMENT

The Contractor shall institute and maintain an effective, efficient, and responsive organization responsible for management and oversight of Contractor personnel, other contract resources, contract performance, deliverables, and cost.

The Contractor shall respond to inquiries on contract performance and status and provide input to LSP programmatic actions and exercises. The Contractor shall facilitate management interactions with NASA, launch providers, spacecraft, and other customers to ensure they are effective. The Contractor shall integrate the overall planning activities identified in Sections of the PWS. The Contractor shall provide knowledge management services to enhance communication and knowledge transfer throughout the LSP organization and provide continuous assistance in identifying changes that enhance productivity in the LSP organization.

The Contractor shall perform and integrate business and administrative functions to meet the reporting requirements of this contract per the Data Requirements Documents (DRD) List, Appendix X.

The Contractor shall provide and maintain contract management systems for planning, organizing, implementing, directing, controlling, and reporting the activities required by this contract. These systems shall accomplish project safety, technical, schedule, and cost objectives. The Contractor shall perform business and management functions to execute and administer the ELVIS 2 contract in compliance with applicable Federal and State laws; and Federal and Agency regulations, requirements, standards, policies, and procedures including but not limited to the documents specified in Appendix B (Applicable Compliance and Reference Documents).

The Contractor shall accomplish the management and technical control of their resources, intra-company, subcontractor, and vendor activities required to fulfill the requirements of this contract. The Contractor shall be accountable for the quality and timeliness of the services and Indefinite-Delivery/Indefinite-Quantity (IDIQ) support provided under this contract.

The Contractor shall provide a Contract Management Plan (DRD-XX) that defines and integrates contract work activities and requirements across the contract, including subcontractor efforts. The Contract Management Plan shall be submitted to and approved by the Contracting Officer (CO).

The Contractor shall maintain an electronic Work Breakdown Structure (WBS) in accordance with (IAW) Work Breakdown Structure and Dictionary. The Contractor shall maintain project controls for managing changes to cost and schedule. The Contractor shall support surges in spacecraft requirements during special testing, operations, launch manning activities, and performing IDIQ tasks while continuing to perform baseline activities.

The Contractor shall provide the Government with a quarterly management review, that includes, at a minimum: financial status, indirect rate reviews and contract cost forecast (with estimate to complete), cost savings and cost avoidance initiatives, systems status, project status, risk management/planning status, changes to organization and subcontractor agreements, performance metrics and safety and health data.

The Contractor shall provide the CO, COTR, and other designated personnel unrestricted on-line access to systems and data generated in the performance of this contract including the capability for ad-hoc query of the data in these systems IAW DRD-XX, Access to Contract Data. The Contractor shall utilize web-based interfaces whenever possible.

The Contractor shall document contract performance against the contract goals and metrics consistent with DRD-XX, Performance Measurement and Documentation System (PMDS).

The Contractor shall alert the COTR and the CO of problems that may impact the timely, cost-effective, and safe delivery of quality products and services under this contract.

## **1.1 Phase-In/Phase-Out**

The Contractor shall develop and deliver a Phase-In/Phase-Out Plan, (PIPO) (DRD-XX) within 30 days of contract award. The PIPO Plan shall define the Contractor's approach to transitioning services from the incumbent contractor while minimizing operational impacts to customers. The Contractor shall implement the PIPO Plan, addressing actions and procedures to ensure a smooth transition from contract award to full operational status.

### **1.1.1 Phase-In**

The PIPO Plan shall include the estimated costs to implement the transition. At a minimum, the Contractor's plan shall address the following areas:

- Approach for interfacing with the incumbent contractors and labor unions
- Proposed management controls and processes
- Schedule showing major steps and critical tasks
- Process for personnel training, badging, and certification
- Procedures for transitioning Information Technology (IT) computer systems, support services and security
- Approach for assuming responsibility for Installation-Provided Property (IPP)



The Contractor shall provide a work force that is fully qualified and capable of performing work required under this contract upon completion of this phase-in period. The Contractor shall coordinate and lead the transition status meetings with the Government and incumbent contractors' participation. The meetings shall be held at a minimum of once per week to discuss phase-in status and issues. The phase-in shall begin 60 days prior to contract start. The Contractor shall implement a work control system capable of tracking new and existing work by completion of the phase-in period. The work control system shall establish interface(s) with the Contractor's financial and time card systems to transmit hours and cost by the end of the phase-in period.

#### **1.1.2 Phase-Out**

The Contractor shall support the succeeding contractor during the ELVIS 2 contract phase-out period. This support includes the transition of management and technical services to the successor contractor while minimizing operational impacts.

### **1.2 Financial Management**

The Contractor shall perform business and financial functions and integrate these functions across areas of performance. The Contractor shall develop, implement, update, and maintain an integrated financial management system for planning, tracking, compiling, and reporting contract costs. The Contractor shall submit monthly Financial Management Reports IAW NPR 9501.02D NASA Form 533M Financial Reports IAW DRD-XX and NASA Form 533M Flat File IAW DRD-XX.

The Contractor's accounting system shall have adequate internal controls to ensure current, timely, accurate and complete data. The system shall be flexible to ensure compliance with the variety of NASA's cost charging and reporting requirements based on category of customer and sources of funds. The Contractor may be required to support commercial space launch activities and report cost IAW KNPD 9090.1.

The Contractor shall provide ongoing financial analyses and respond to the Government's requests related to budget, schedule, and cost performance. The Contractor shall participate in monthly financial reviews with the Government to discuss cost performance. These reviews shall include both formal and informal reviews.

The Contractor shall develop phasing plans and multiyear budgets detailing specific mission or project level requirement estimates based on NASA-provided budget assumptions and manifest. The Contractor shall provide a written budget input as noted in DRD-XX, Access to Contract Data-Planning, Programming, Budgeting, Execution (PPBE) and Cost Phasing Budget Input.

The Contractor shall provide an IDIQ/Task Order report IAW DRD-XX.

## **1.3 Contract Administration**

### **1.3.1 Safety and Health**

The Contractor shall implement safety and health measures IAW NFS 1852.223-70, Safety and Health and attachment J-XX to ensure the protection of the public, NASA and contractor workforce and high-value equipment.

In performance of these services, the Contractor shall maintain technical cognizance of proposed and implemented changes to applicable Federal, State, and local laws, regulations, policies, and directives, as well as industry standards, and identify impacts to contractor safety and health requirements, processes, and practices. The Contractor shall maintain safe and healthful operating locations and be proactive in the protection of personnel and property.

The Contractor shall provide the Government, or authorized contractor representative, immediate access to the sites or areas where work under this contract is being performed to enable surveillance of Contractor activities and determine the adequacy of the Contractor's safety and health programs. The Contractor shall provide records, including but not limited to internal audit and assessment results and surveillance activities, to NASA for review. The Contractor shall ensure Contractor employees receive required Federal or NASA initial and recurring safety and health training. The Contractor shall maintain evidence that this required training has been completed and is current. The Contractor shall monitor and maintain accurate records of employees work hours, including forecasting work schedules, to ensure maximum work-time compliance per the current version of KNPR 8715.3, KSC Safety Practices Procedural Requirements.

The Contractor shall update and maintain a Safety and Health Plan (DRD-XX), as required by NFS 1852.223-73, Safety and Health Plan.

The Contractor shall establish a safety and health program throughout organizations of the contract including major subcontractors to comply with the Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP) Star Program requirements and submit VPP application (DRD-XX) to NASA.

### **1.3.2 Workforce Management**

#### **1.3.2.1 Human Resources**

The Contractor shall recruit and maintain a skilled workforce. The Contractor shall apprise the COTR and CO of human resource issues that could impact the Contractor's ability to perform required elements of this contract. The Contractor shall take a proactive management approach to

labor relations involving collective bargaining agreements and participate in the KSC Labor Management Council.

The Contractor shall implement effective and efficient strategies to establish and sustain amicable relations with labor unions while using prudent business practices to ensure best value to the Government.

The Contractor shall ensure that Contractor personnel data are maintained in NASA Self Service Management Tool (SSMT).

The Contractor shall provide a monthly report with details for on-site personnel at KSC/CCAFS, VAFB, and other resident office locations IAW DRD-XX, Quarterly Headcount Report.

The Contractor shall provide information on workforce planning (DRD-XX), Advance Notification of Workforce Reductions Report, and labor relations, (DRD-XX), Quarterly Summary of 3rd Step Grievances and Arbitrations Report.

#### **1.3.2.2 Equal Employment Opportunity**

The Contractor shall promote equal opportunity IAW the guidelines set forth by FAR 52.222-26, Equal Opportunity, and also consider the recommendations made by the KSC Equal Employment Opportunity Officer. The Contractor's shall provide a written report IAW DRD-XX, Equal Employment Opportunity Report.

#### **1.3.2.3 Nominal Work Hours**

The nominal Contractor 1st shift shall be 7:00 a.m. to 4:30 p.m. local coverage. Overtime shall not be allowable during these hours. Shift coverage should be flexible based on missions and support requirements.

#### **1.3.2.4 Contract Risk Management**

The Contractor shall implement risk management techniques that efficiently identify, analyze, mitigate, and track potential impacts to mission success. The Contractor shall update and maintain a Risk Management Plan (DRD-XX) IAW the current version of NPR 7120.5, NASA Space Flight Program and Project Management Requirements (Section 4.2 Programs - Implementation Phase) and the current version of NPR 8000.4, Agency Risk Management Procedures and Guidelines. The Risk Management Plan shall provide an organized and systematic decision making process that efficiently manages risks associated with Contractor activities. The Contractor shall use the processes and procedures defined

in the Program Operating Structure (Launch Services Program Risk Management Plan, LSP-PLN-353.01).

#### **1.3.2.5 Quality Management System**

The Contractor shall comply with the requirements of American National Standards Institute (ANSI)/ISO/American Society for Quality (ASQ) 9001/2008, American National Standard or AS9100 Aerospace Quality Management System.

#### **1.3.2.6 Training & Certifications**

The Contractor shall provide a workforce that is trained, certified, and licensed, as required, competent, experienced, and reliable in order to meet responsibilities under the contract. The Contractor shall ensure that the work force is knowledgeable of the applicable laws, regulations, and Government directives to include but not limited to OSHA, Environmental Protection Agency (EPA), Export Control Regulations, Agency policy guidance, and KSC directives affecting them and concerning their tasks. The Contractor shall maintain a training and certification record system to document technical training and certification of Contractor personnel.

#### **1.3.2.7 Associate Contractor Agreements and Non-disclosure Agreements**

The Contractor shall establish Associate Contractor Agreements (ACAs) with other designated KSC, CCAFS and VAFB contractors. In no case should ACAs be in conflict with requirements established by the Government. The Contractor shall recognize existing standardized plans, practices, policies, procedures, and agreements developed and used by other contractors for example NLS II, IMCS, ISC, SMASS, ESC, CAPPS and Government personnel for work within this contract.

The Contractor shall ensure that Non-disclosure Agreements (NDA) are in place for personnel under this contract. The Contractor shall verify that the associate contractor personnel have NDA's in place before providing them access to sensitive or proprietary data.

#### **1.3.2.8 Contractor Office Workstations**

The Contractor shall utilize the government designated provider for administrative workstations to the maximum extent possible. For applications that cannot use the government designated provider for workstations, the Contractor shall apply for a waiver through the Telemetry, Information Technology and Communications Control Board (TICCB). Desktop software tools used by the Contractor must seamlessly integrate with similar desktop software tools used by the NASA LSP

organization. NASA LSP personnel shall be able to open, modify, save, and print documents created by contractor personnel using contractor desktop software tools. The Contractor shall ensure that the KSC Global Address List and Self Service Management Tool (SSMT) directory are kept up to date for Contractor staff located at KSC and remote sites. The Contractor shall provide, install, and maintain encryption software for contractor staff that is required to exchange encrypted email messages and other files with LSP commercial launch providers.

The Contractor shall provide sufficient Client Access Licenses (CAL's) to allow Contractor personnel to connect to server applications from administrative workstations within the Launch Services Program Information System as required to maintain compliance with software licensing requirements.

## **1.4 Technical Integration Management**

### **1.4.1 Work Control Processes**

The Contractor shall provide and maintain an electronic WBS. The Contractor shall establish, implement, and update a documented work control process used to plan, schedule, execute, monitor, and track work. The process shall include a control process for receiving work instructions from NASA, and validating requirements. The control process shall prevent the Contractor from acting upon the direction of unauthorized agents. The Government shall have access to this data under DRD-XX, Access to Contract Data-Insight into Work Status.

#### **1.4.1.1 Work for Others**

Work for Others is defined as work performed for and paid for by other(s) under a separate agreement.

The Government will review requests for Contractor work for other NASA Centers or Government Programs prior to commencement, to ensure compatibility with the Government's funding requirements and priorities. Contractor work for others shall not create a conflict of interest or interfere with the performance of this PWS.

### **1.4.2 Records and Data Management**

The Contractor shall ensure accurate and complete records of Government business are maintained IAW the current version of NPR 1441.1, NASA Records Retention Schedules. This includes legacy Federal records (data created for Government use and delivered to, or falling under the legal control of the Government) inherited from previous contracts, Government-owned, Contractor-held electronic, and vital records. Records of Government business shall be

segregated from company-owned records and from non-record materials. The Contractor shall provide NASA or authorized representative's access to Government records IAW FAR Subpart 4.7. The Contractor shall transfer Government-owned data to the Government at the completion or termination of this contract.

The Contractor shall develop, maintain and implement a Records Management Plan and Annual Summary of Record Holdings (DRD-XX). The Contractor shall comply with the current version of NPD 1440.6, NASA Records Management and KSC requirements.

### **1.4.3 Emergency Management**

The Contractor shall develop, implement, and update an Emergency Preparedness Plan (EMP) (DRD-XX) IAW the current version of KNPR 8715.2, Comprehensive Emergency Management Plan. The EMP shall integrate the Contractor's approach to emergency preparedness, response and recovery to provide a safe work environment for the employees.

The Contractor shall ensure the Emergency Preparedness Plan includes actions to respond to significant loss of capability due to accident or incident, equipment or infrastructure failures, attacks against computer systems and networks, loss of capability due to natural disaster, and other emergency situations, and include plans to conduct timely recovery. The plan shall include the Contractor's approach to implementing specific protective and preventative measures for the Contractor's assigned facilities, systems, equipment, and operations as well as assumptions concerning required Government involvement. Mission specific requirements shall be addressed where applicable.

The Contractor shall designate a Contractor Emergency Coordinator responsible for supporting emergency preparedness planning and implementation, and interface with the LSP Emergency Preparedness Officer.

The Contractor shall plan for and participate in emergency management exercises and drills.

The Contractor shall support hurricane preparation and recovery activities in compliance with the current version of KDP-KSC-P-3006, Tropical Storm and Hurricane Preparation, Response, and Recovery.

### **1.4.4 Security Management**

#### **1.4.4.1 Physical Security**

The Contractor shall develop, update, and implement a Security Management Plan (DRD-XX), IAW the current version KNPR 1600.1, KSC Security Procedural Requirements, the current version of NPR

1371.2, Procedural Requirements for Processing Requests for Access to NASA Installations or Facilities by Foreign National and U.S. Citizens who are Representatives of Foreign Entities, and Department of Defense (DoD) 5220.22, National Industrial Security Program Operating Manual.

The Contractor shall ensure that designated Sensitive But Unclassified (SBU) materials are encrypted at rest and during transmission. The Contractor shall utilize the Government Furnished Services, Appendix X, to meet data encryption requirements. The Contractor shall identify a SBU representative that will be the contract's interface to the KSC SBU Officer.

The Contractor shall comply with the current version of NPD 1660.1, NASA Counterintelligence (CI) Policy and the current version of NPR 1660.1, Counterintelligence (CI)/Counterterrorism (CT) Procedural Requirements.

The Contractor shall implement privacy information protection IAW the current version of NPD 1382.17, NASA Privacy Policy, and the current version of NPR 1382.1, NASA Privacy Procedural Requirements.

#### **1.4.4.2 Export Control**

The Contractor shall comply with US export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract.

The Contractor shall create and implement an Export Control Plan as specified in DRD-XX, Export Control Plan, IAW the current version of NPD 2190.1, NASA Export Control Program. The Contractor shall identify a representative to be named to the Center Export Control Working Group (ECWG).

#### **1.4.4.3 Audit/Investigation Support**

The Contractor shall provide support and information to internal and external auditing and investigations performed by agencies to include but not limited to General Accounting Office (GAO), Office of the Inspector General (OIG), Defense Contracting Audit Agency (DCAA), Defense Contract Management Agency (DCMA), Federal Bureau of Investigation (FBI), Office of Management and Budget (OMB), and LSP approved audits.

**1.4.4.4 Continuity of Operations**

The Contractor shall develop and maintain a Continuity of Operations Plan (COOP) (DRD-XX) compliant with the current version of NPD 1040.4, NASA Continuity of Operations (COOP) and the current version of NPR 1040.1, NASA Continuity of Operations (COOP) Planning Procedure Requirements. At least annually, the Contractor shall test the COOP as defined in NPR 1040.1 (as revised) and provide documented results to the Government per COOP Annual Test Report (DRD-XX).

**1.4.5 Sustaining Engineering**

The Contractor shall provide sustaining engineering services for systems, software, and equipment identified in this contract. Sustaining engineering includes but is not limited to: changes and modifications to systems to provide additional service capacity, adding features to software, reductions of operational risk, replacement of obsolete hardware and software, or consolidation of services.

The Contractor shall conduct data and system administration, analysis, testing/troubleshooting, tuning, and systems programming activities. The Contractor shall perform preventive maintenance and repairs for hardware systems and stand-alone equipment and make changes to systems and software to increase efficiency, lower costs, and decrease operational risk.

The Contractor shall manage and document the configuration of the current architecture and planned architecture changes utilizing procedures and processes IAW the Launch Services Program TICCB guidance.

The Contractor shall recommend, procure, incorporate, and operate replacements for obsolete Installation Accountable Property (IAP). As part of the Six Year Buy Plan (DRD-XX), the Contractor shall develop recommendations for replacing components and systems to decrease obsolescence. The Government will approve planned replacements or upgrades prior to Contractor expenditures. The Contractor shall ensure that no sustaining engineering change causes an unapproved system architecture modification or a degradation of service.

**1.4.6 Logistics Services**

The Contractor shall integrate logistics requirements for assigned KSC/CCAFS and VAFB operations and activities and other activities for LSP launch site support as described in this PWS.



**1.4.6.1 Property/Inventory Control**

The Contractor shall ensure the proper control, use, and maintenance of Government property provided to support the ELVIS 2 operations (Appendix X, Contractor-Accountable Government Property (CAGP)). The Contractor shall serve as the Property Custodian for Installation Accountable Property provided to the ELVIS 2 IAW government regulations as defined in the current version of KNPR 4000.1, Supply and Equipment System Manual and the current version of NPR 4200.1, NASA Equipment Management Procedural Requirements. The Contractor shall maintain physical control and accountable records for NASA-owned controlled equipment and utilize the NASA Property System (N-PROP) to identify, account for, and control NASA equipment and property.

The Contractor shall assess, recommend, and purchase Government property required for maintaining successful day-to-day operations. The Contractor shall be reimbursed on a non-fee bearing basis for Government approved purchases classified as critical spares, bench stock, consumables and associated equipment materials and services as needed to meet the requirements of this contract. Purchases shall be pre-coordinated and approved by the Government.

The Contractor shall utilize Government-provided storage facilities for storage of hardware, software, and other associated equipment to meet the requirements of this contract.

The Contractor shall prepare items for shipping, with adequate documentation, as required by the Government-furnished services (GFS) shipping service provider.

The Contractor shall provide receiving and inspection functions including accountability and storage. The Contractor shall utilize the existing property tags permanently affixed to existing assets and utilize Government provided NASA Equipment Control Number (ECN) tags and decals for acquired or procured equipment

The Contractor shall remove un-usable, obsolete, or damaged Installation Accountable Property IAW KNPR 4000.1 (as revised).

The Contractor shall provide a property management accountability plan, DRD-XX for property that is not managed through N-PROP.

**1.4.6.2 Vehicle Management**

The Contractor shall be responsible for performing vehicle management functions IAW the current versions of NPR 6200.1, NASA Transportation

and General Traffic Management; NPD 6000.1, Transportation Management; and KNPR 6000.1, Transportation Support System Manual, and Executive Order 13423, Strengthening Federal, Environmental, Energy, and Transportation Management.

The Contractor shall furnish and maintain general purpose vehicles in support of contract requirements. At the discretion of the Contractor, General Services Administration (GSA) schedules may be utilized to satisfy the requirements for motor vehicles. The Contractor shall provide evidence that they have motor vehicle liability insurance covering bodily injury and property damage, with limits of liability as required or approved by the agency, protecting the Contractor and the Government against third-party claims arising from the ownership, maintenance, or use of an interagency fleet management system vehicle.

The Contractor shall operate NASA-owned or leased vehicles identified in Appendix-X, Government-Furnished Property. The Contractor shall utilize KSC on-site fueling stations for fueling general purpose vehicles and Government-furnished vehicles. The Contractor shall ensure that drivers have proper state licenses, with the applicable endorsements, for requisite equipment being operated. The Contractor shall ensure all government-owned vehicles have agency license plates. The Contractor shall report vehicle cost, utilization, fuel consumption, accident data, and other data required for consolidated KSC reports IAW DRD-XX.

The Contractor shall input the required data into the GSA Federal Automotive Statistical Tool (FAST) for contractor-acquired/leased GSA vehicles and NASA-owned vehicles annually, as scheduled by the NASA Fleet Manager and provide a Motor Vehicle Utilization Plan (DRD-XX).

#### **1.4.7 Travel Management**

The Contractor shall maintain records for travel in support of LSP. The Contractor shall provide a foreign travel request for the review and approval by the Government, prior to incurring costs.

#### **1.4.8 Environmental Management**

The Contractor is responsible for ensuring that operations of assigned systems and equipment are in compliance with applicable federal, state, and local environmental laws, regulations, Executive Orders, KSC requirements IAW the current version of KNPR 8500.1, KSC Environmental Requirements and the Joint Operating and Support Procedure (45 SW No. 15E-3-10/KCA No. 1285, Revision A) between the 45 SW and the KSC. The KSC Environmental Program Branch is the single POC with regulatory agencies concerning KSC for

issues such as regulatory interpretation, compliance reporting, inspections, and spills or releases.

## **2.0 Special Studies**

The Contractor shall perform special studies, projects, and analyses; activities to include but are not limited to:

- Advance planning and feasibility studies in support of future missions
- Analyses in support of change requirements to authorized missions
- Development, fabrication, and test of hardware/software to support planning studies or special tests
- Mission unique studies
- Technology applications
- Safety and Mission Assurance
- Processing and launch of nuclear spacecraft
- Enhancement of the quality of LSP services and capabilities
- Feasibility studies and advanced planning in support of future NASA programs (e.g. Commercial Crew, Commercial Cargo, Robotic Precursor, and Technology Demonstration) and special projects for other customers in order to establish technical options for LSP.

The Contractor shall establish resources required (manpower, facilities, consumables and permits), plan and implement the tasks required, and provide a written report detailing the results at the conclusion of the study effort.

## **3.0 LSP Program Management**

The Contractor is responsible for performing and integrating the Programmatic LSP business and administrative functions as specified below.

### **3.1 LSP Program Planning Support**

The Contractor shall implement, maintain, and disseminate an LSP Program Schedule using contractor-provided licenses for Milestones Professional software or equivalent.

The Contractor shall maintain an integrated master schedule of key meetings, reviews, schedules, projects and processes IAW (DRD-XX), LSP Program Schedule. The Contractor shall identify and present conflicts on the schedule to LSP Program Management each week.

### **3.2 LSP Program Monthly Review**

The Contractor shall collect inputs for the LSP Monthly Program Review from the various NASA, LSP and support contractors, integrate the data, reproduce and distribute the presentation electronically to the NASA LSP Program Manager IAW

DRD-XX, Monthly Program Review Presentation. The Contractor shall record, track and status action items resulting from this review.

### **3.3 Program Evaluation, Measurement, and Performance Data**

The Contractor shall provide data to support and update LSP performance indicators to evaluate the overall progress and work content (excluding cost) of the LSP Program pertinent to the current version of KDP-B-1028, John F. Kennedy Space Center Business Objectives and Agreement for Launch Services Program in Section 3.0 Mission Objectives – Performance Indicator Column. The data shall be submitted IAW (DRD-XX) Measurements and Performance Indicators.

### **3.4 Program Financial Management Support**

The Contractor shall organize and maintain comprehensive LSP Program data on Contract Action Requests (CARs) including data collection, tracking, and reporting IAW DRD-XX Access to Contract Data. The Contractor shall control access to sensitive proprietary financial data.

### **3.5 Secretariat Functions for PRCB, PDM, and Risk Management**

The Contractor shall perform secretariat functions such as: scheduling intergovernmental meetings, arranging facilities, providing status reports and documenting official decisions and actions assigned, and maintaining charter documents and records and databases to include but not limited to Risk Management Database and Configuration Change Request Database for the following activities:

- Launch Services Program (LSP) Program Requirements Control Board (PRCB) Plan (LSP-PLN-351.01)
- Launch Services Program (LSP) Risk Management Plan (LSP-PLN-353.01)

### **3.6 Program Information and Documentation Maintenance**

#### **3.6.1 Information Management**

Using inputs from the LSP, the Contractor shall identify, control, and manage Program information and documentation in a manner that ensures that information is readily accessible, easily retrievable, and preserved. Program information includes documents, data and electronic systems, and associated metadata. Documents include, but are not limited to LSP administrative files, policies, processes, forms, technical instructions, agreements, metrics, and other structured or unstructured documents in support of the Program. The Contractor shall support the LSP Records Liaison Officer and Records Technical Representative with the maintenance and management of Program records.

The Contractor shall support the development, implementation, and maintenance of the LSP Information Program Policy, LSP-PD-120.01, a comprehensive Information Management Plan, LSP-PLN-352.01, LSP Information Management Process Map, LSP-D-120.01, and Launch Services Program File Plan, LSP-R-358.01, IAW the procedures and instructions in the KSC Business Management System Documentation (BMSD), KNPR 1470.1 and other KSC requirements including the current version of KNPD 1440.1, KSC Records Management Programs.

### **3.6.2 Document Management**

The Contractor shall provide support services to include but not limited to:

- Identify, control, and manage LSP documentation, including performing status accounting, and audit functions.
- Review, load, associate metadata, and perform the release of electronic copies of LSP documentation into the Tech Doc System, or other identified systems for the LSP.
- Assisting Document Points of Contact in the creation of Program documentation. Coordinate with the KSC Business Management System Documentation Manager on issues involving management system documentation.
- Perform Application Administration support for Tier 1 and 2 TechDoc, or other Program documentation systems.
- Maintain SharePoint web pages, lists, and libraries, and other web pages in support of Information Management activities.
- Ensure that documents are marked for retrieval.
- Provide familiarizing training for LSP employees with information-related practices and tools.
- Develop data input, nomenclature and filing processes that are consistent with NASA documentation guidelines and archive records per NASA Records Retention Schedules, NPR 1441.1 (as revised), and KSC requirements.
- Scan and/or retrieve and store library contributions into identified LSP libraries, KSC archives, or Federal archives.
- Distribute deliverables and documents to parties identified on distribution lists.
- Provide hard copies of library items upon request.
- Support Program internal/external audits.
- Develop metrics to track problem areas, high-priority actions, strategic initiatives, and other operations as required.

### 3.6.3 Export Control Support Services for LSP

The Contractor shall ensure export control is addressed for LSP supported missions. Identify required agreements and export control licenses, their status, and potential impacts to the relevant mission. The Contractor shall track export control issues, actions, and closures in electronic form.

The Contractor shall coordinate issues with the Government Point of Contact (POC) for each mission and the Mission Integration Manager (MIM). The Contractor shall provide export control mission briefings to customer personnel and NASA Mission Integration Team (MIT) members and management. The Contractor shall review LSP websites to ensure compliance with export control regulations. Classify Export Control shipments.

The Contractor shall identify required export licenses and support the application submittal within 30 days of a mission being approved for the LSP manifest. The Contractor shall provide current status of existing export licenses and license applications.

## 3.7 Technical Writing, Reports, and Documentation

The Contractor shall provide technical writing, editing, and technical illustration of various programmatic, engineering, science and technology documents, reports, strategic plans and presentations related to LSP activities. Support shall include researching, writing, reviewing, editing, typing, and proofreading to ensure production of a complete document ready for approval.

The Contractor shall support the development and maintenance of engineering requirements, processes, standards and specifications.

The Contractor shall develop and maintain engineering, science and business processes, procedures and documentation.

The Contractor shall provide technology reports IAW (DRD-XX).

## 3.8 Program Outreach Services

The Contractor shall provide Outreach Services to assist in identifying, scheduling, conducting, and evaluating outreach events.

The Contractor shall provide services to include but not limited to:

- Prepare, organize, maintain and report trending data, spreadsheets, and metrics for the LSP Outreach, including support to Schools, Public Affairs Events, and Employee Morale efforts.

- Create, maintain, organize and report metrics for the LSP outreach surveys to assist in evaluating the effectiveness of the outreach program.
- Develop and maintain spreadsheets of participating schools and identify target schools to maximize the impact of the outreach activities to encourage students to pursue Math, Science, and Technology degrees.
- Support outreach events off site to schools and events.
- Perform data management functions including maintaining spreadsheets, documents, records and databases.
- Prepare and deliver outreach packages containing mission patches, lapel pins and other mission related items for schools, conferences, and events. The supplies will be purchased by the government.
- Research and develop the assigned LSP Mission News Letters. Will work directly with NASA HQ's Directorate ESMD, ARMD, SOMD, SMD, OER, Approvers. Mission News Letters must be completed and ready for the Communication Material Review Board no later than 3 months before mission launch date.
- Conduct market research and provide reports that identify new suppliers of innovative, quality products for inclusion in outreach packages.
- Prepare unique folders for Launch Campaigns.
- Assemble Purchase Requests when assigned for materials for Outreach Materials.
- Schedule internal and external Outreach Office meetings, maintain meeting minutes and actions assigned.

The Contractor shall provide data entry services for the Outreach activities. Data entry services shall include:

- Adjust, implement, and maintain financial tracking system capable of discretely tracking outreach accounts and funding by mission
- Maintain input into the LSP Program Planning Office (PPO), financial tracking system.
- Develop budget forecasting support for long-range budget planning for the PPO outreach projects and individual missions.
- Ensure that NASA financial data is controlled and protected.

**Maintain Documentation:**

The Contractor shall maintain the PPO Outreach logs and provide monthly status reports in the following categories:

- LSP School and Events Spreadsheet
- XA-LSP School and Events Spreadsheet
- Outreach Items Available Document
- Survey Data Base
- Government Printing Office Outreach Spreadsheet (tracking)
- Government Printing Office Employee Spreadsheet (tracking)
- Mission Unique Outreach Budget Spreadsheets
- Employee Morale Budget Spreadsheet

- LSP Generic Budget Spreadsheet

Data and logs shall be accessible for review by PPO personnel.

### **3.9 Conference Room Scheduling**

The Contractor shall be responsible for coordination and scheduling of LSP conference rooms. Scheduling shall entail activities required to reserve the room for any user, to be the focal point for and coordinate support from various Center support contractors, and to notify LSP Program Management if significant schedule conflicts arise.

### **3.10 Language Lab Scheduling**

The Contractor shall be responsible for coordination and scheduling of the Launch Services Language Lab (LSLL), utilizing Microsoft Outlook, or successor software. Scheduling of the LSLL shall entail activities required to establish and manage the language lab calendars for each language available in the lab and to maximize availability of the lab to authorized LSP personnel. The contractor shall establish usage limits and protocols, and de-conflict schedules for utilization during peak hours. The Contractor shall resolve routine scheduling issues and notify the LSP Program Management if significant scheduling conflicts arise.

### **3.11 Industrial Engineering Network Support**

The Contractor shall, in coordination with the Industrial Engineering Network, actively participate in continuous improvement projects for Program enhancements. The Contractor shall seek optimum solutions that result in Program efficiencies and significant improvements.

### **3.12 NASA Public Affairs Support**

The Contractor shall, in coordination with the NASA LSP Public Affairs Office (PAO) Liaison obtain and document KSC Public Affairs Office (PAO) requirements including but not limited to the following: voice communications, video, timing, satellite up-links and down-links, Launch Site Support Trailer (LSST), administrative support, press conference rooms. The Contractor shall participate in planning meetings and teleconferences. The Contractor shall develop a PAO Mission Support Plan (PMSP) (DRD-XX) based on PAO requirements. The Contractor shall submit the PMSP to the NASA LSP Public Affairs Office (PAO) Liaison for review and approval no later than 30 calendar days before launch. The contractor shall implement the PMSP to ensure successful PAO launch coverage.



For VAFB missions, the Contractor shall provide mobile satellite uplink services for NASA sponsored missions to support mission-direct activities including an end-to-end communications test prior to launch day and/or a launch attempt.

For VAFB missions, the Contractor shall provide launch site viewing services for 50 guests (and additional guests in units of 25 guests) to NASA for the initial launch attempt for each mission. These services shall include processing of requests, set-up of a guest check-in area, arrange for tent/canopy, restroom facilities, chairs, drinking water and dispensers, TV monitors, public address system, traffic control, emergency medical service at the viewing area, transportation of guests, and conducting tours of the NASA facilities at VAFB.

#### **4.0 Commercial Launch Provider Program and Process Insight**

The NASA Safety and Mission Assurance (SMA) Launch Services (LS) Division is responsible for the independent oversight and assessment needed to certify flight readiness for LSP sponsored missions and activities. The Government utilizes an independent support contractor to supplement this responsibility. The ELVIS 2 Contractor is responsible for providing the appropriate program and process insight required to allow the independent assessment for flight readiness.

The ELVIS 2 Contractor shall provide the necessary support to allow for the collection and analysis of commercial launch provider program and process data, including but not limited to nonconformances, audits, manufacturing and production processes and integration, hardware reviews, design reviews, failure effects analysis, reliability analysis, as well as overall program risk management and mitigation efforts.

Primary locations of performance shall be at KSC, the launch sites, and are extended to include commercial launch providers' locations (e.g., Florida; Denver, Colorado; Decatur, Alabama; Chandler, Arizona; Hawthorne, California and potentially other locations following NLS 2) and spacecraft providers' locations associated with manufacturing, design, processing and testing. The Contractor will receive programmatic, mission, and/or policy guidance from the Government, including task prioritization. The Contractor is required to status the Government on progress of planning, coordinating, implementing, and resolving conflicts in the conduct of work. The Contractor is required to make technically sound decisions, make recommendations, provide technical interchange, provide status, and immediately communicate significant issues that have the potential to increase the overall risk to LSP. The Contractor is allowed a high-degree of independence and expected to seek optimum technical solutions to problems and processes. The Government reserves the right to reprioritize mutually-agreed to tasks to accomplish NASA SMA mission and non-mission priorities.

The Contractor shall comply with the current version of KNPR 8715.3, Kennedy Space Center Safety Practices/Procedural Requirements; the current version of NPR

8621.1 and NASA Procedural Requirements for Mishap Reporting, Investigating, and Record Keeping. The Contractor shall participate in reviews, meetings, pertinent tests and site visits. The Contractor shall produce technical assessments, evaluations, watch items and risks in support of the Division's Certificate of Flight Readiness as defined in current versions of Launch Services Operating Plan KTI-3643; Quality Insight Plan, KTI-3646; Watch Item Process, KDP-P-3609; Launch Services SMA Flight Readiness Process, KDP-P-3642; LSP-PLN-353.01, Launch Services Program Risk Management Plan; and other appropriate internal operating procedures and processes. The Contractor shall document products, performance activities and provide applicable reports outlined in Section 4.1 through 4.6 IAW DRD-XX.

The Contractor shall review for compliance, the commercial launch provider's Quality Management Plans, Reliability Program Plans, Safety & Health Plans and Risk Management Plans. The Contractor shall provide technical interchange with the Government to immediately communicate concerns and significant issues. The Contractor shall produce supporting products IAW DRD-XX.

The Contractor shall provide support for mission related activities which occur beyond nominal work hours. The occurrence of these activities after nominal work hours is a result of spacecraft and commercial launch provider schedules including but not limited to the following: spacecraft processing at the PPFs, spacecraft/launch vehicle integration activities and launch campaign activities. The Contractor shall coordinate with the Government for work beyond nominal work hours.

#### **4.1 Mishap Planning and Reporting**

The Contractor shall support mishap investigation, reporting, and related lessons learned activities performed by the Government. The Contractor shall perform data gathering, analysis and report preparation for mishap, near miss, close call and lessons-learned. The Contractor shall provide technical interchange with the Government to immediately communicate mishap, near misses, close calls or significant issues as soon as they arise. The Contractor shall produce supporting products IAW DRD-XX.

##### **4.1.1 Mishap Preparedness and Contingency Planning**

The Contractor shall prepare, update, and coordinate the LSP Mishap Preparedness and Contingency Plan and associated specific exhibits for each mission per NPR 8621.1(as revised) and KNPR 8715.3 (as revised). The plan shall include all the appropriate notifications, response support, data and debris impoundment and collection, identification of all hazards associated with the particular mission, and integrate all other planning response interfaces from the launch site host agency, spacecraft and commercial launch providers. The Contractor shall develop and maintain for each mission, mission console notebooks, data impound kits, call lists, and note cards for the Interim Response Team members and the Chief Safety Officer. The Contractor shall pre-

coordinate impoundment areas, meeting rooms and telecon numbers. The Contractor shall coordinate and implement the tabletop reviews, training, schedule meetings, and integrate mishap plans. The Contractor shall coordinate with the host agency, spacecraft, LSP and commercial launch provider Interim Response Team Chairs. The Contractor shall coordinate on-console exercises IAW NPR 8621.1 (as revised). The Contractor shall produce supporting products IAW DRD-XX.

## **4.2 Mission System Safety Engineering and Analysis Services**

The Contractor shall provide System Safety Engineering and Analysis support to the Government. The Contractor shall perform system safety reviews, analysis and assessments to assure compliance of existing, modified and new commercial launch vehicle configurations, associated support equipment (GSE/GFE), processing facilities, and processes, including spacecraft integration.

The Contractor shall perform the system safety functions for LSP sponsored missions and activities. The Contractor shall perform safety analysis of the launch vehicle, spacecraft and associated support equipment design, as well as processing activities to provide an assessment of the compliance with applicable safety standards and requirements (e.g., local, state, federal, NASA, or Range). The Contractor shall perform safety reviews of launch vehicle and spacecraft related safety products. These safety products shall include but are not limited to; system safety plans, tailored safety requirements; safety data packages, hazard reports; fault tree analyses; failure mode, effects, and criticality analyses; hazardous procedures; and non-compliances. The Contractor shall provide technical interchange with the Government to immediately communicate concerns or significant issues.

## **4.3 Quality Assurance**

### **4.3.1 Audits**

The Contractor shall support NASA's performance of, or participation in, audits of the commercial launch provider as required. The Contractor shall provide technical interchange with the Government to immediately communicate concerns and significant issues.

### **4.3.2 GIDEP Alert**

The Contractor shall participate in the Government Industry Data Exchange Program (GIDEP) and provide Alert System Documentation to NASA. The Contractor shall develop Alert Reports that communicate potential impacts to LSP and commercial launch providers IAW DRD-XX.

### **4.3.3 Software Assurance**

The Contractor shall evaluate commercial launch provider's software assurance programs to ensure compliance with commercial launch provider's internal quality management plans. The software assurance approach will also be evaluated using ISO 90003: as a guideline. The Contractor shall provide technical interchange with the Government to immediately communicate concerns and significant issues.

#### **4.3.4 Quality Assurance Surveillance of Commercial Launch Providers**

The Contractor shall provide surveillance at manufacturing, processing, testing, and launch site locations. The Contractor shall provide rapid, accurate, and complete assessment of technical issues uncovered within selected commercial launch provider facilities and notification to the Government. The Contractor shall include on-site representation at the NASA commercial launch provider resident offices in order to maintain insight into the commercial launch provider's facilities, and a knowledge base adequate to ensure prompt, accurate and complete technical assessment of issues and anomalies that arise in the required commercial launch provider facilities. The primary commercial launch provider facilities that may require representation are; Decatur, Alabama; Denver, Colorado; Chandler, Arizona; Hawthorne, California; Dulles, Virginia; and other locations as new commercial launch providers are identified.

#### **4.4 Reliability Engineering Services**

The Contractor shall provide Reliability Engineering support to the Government. The primary responsibility will be to perform the reliability effort for the LSP certification of modified and new commercial launch vehicle configurations and related processes to include spacecraft integration.

The Contractor shall perform analysis of the overall predicted launch vehicle design and mission reliability for LSP sponsored missions and activities. The Contractor shall assess the compliance of the design reliability and effect of risks to mission reliability. These analyses shall include but are not limited to assumptions, completeness, methodologies, design constraints, mission unique items, and reliability predictions included in design reviews for LSP and commercial launch provider's systems.

The Contractor shall provide reliability engineering training to LSP reliability engineering personnel as required. The Contractor shall participate, as required, in the NASA LSP Engineering Review Board (ERB) process, providing reliability engineering support and performing risk assessments on ERB disposition effects on launch vehicle reliability. The Contractor shall provide technical interchange with the Government to immediately communicate reliability concerns or significant issues as they arise.

## **4.5 Technical Integration Services**

The requirements of this section shall be performed for LSP sponsored missions and activities as described below.

### **4.5.1 Technical Products and Services for Mission Readiness**

The Contractor shall integrate technical products and services for each mission and activity. The Contractor shall prepare and coordinate presentation material and schedules for the mission launch process reviews. The Contractor shall record, organize and track SMA office actions and recommendations. The Contractor shall perform data management functions in support of the Government for the SMA Database and other resources. The Contractor shall prepare, organize, coordinate and maintain SMA office reports, documentation and contingency plans. The Contractor shall organize, track and report trending data and metrics for Launch Service Provider and vendor processes, products and services. The Contractor shall maintain SMA office schedules that are integrated with the Launch Service Provider and mission schedules including milestones, working groups, meetings and reviews. The Contractor shall perform the Watch Item panel coordination function IAW KDP-P-3609 (as revised).

The Contractor shall organize, schedule, coordinate, track and document data analysis in support of the Government's independent certification of flight readiness.

### **4.5.2 Commercial Launch Provider Analysis**

The Contractor shall identify LSP qualification test or test anomalies involving similar launch vehicle system, subassemblies, and components. The Contractor shall document and track open items, anomalies, and issues that could adversely affect present or future NASA missions. The Contractor shall maintain insight into fleet wide (including non-NASA missions) problems, MRB actions, deviations, and waivers to system, subsystem, materials, processes, and test equipment. The Contractor shall provide technical integration, engineering analysis and metrics and trending of the commercial launch providers. The assessment shall determine compliance with applicable launch vehicle contracts and NASA requirements including but not limited to the following processes:

- Corrective and Preventative Action
- Non-conformance Reporting
- Material Review Board
- Hardware Acceptance
- Supplier Control
- Quality Audits and Assessments
- Software Assurance

- Quality Planning
- Continuous Improvement Tools
- Limited Life Items
- First flight, first use, and mission unique items
- Design/manufacturing changes
- Hardware/software issues and risks
- Certification, qualification, acceptance, and testing

The Contractor shall develop data collection plans and monitoring tools to facilitate insight surveillance of the commercial launch providers. The Contractor shall provide measurement systems to support data trending and analysis including metrics related to such data. The Contractor shall implement appropriate statistical tools and analysis to identify areas where improvement may be necessary and advise the Government as to what course of action to take when improvements are necessary. The Contractor shall create the process for metric development and analyze trends to identify performance indicators. The Contractor shall ensure that data supporting any metric is validated as reliable, feasible and suitable for managerial decision-making.

#### **4.5.3 Data Analysis and Evaluation**

The Contractor shall analyze and evaluate the SMA Database (SMADb), Engineering Review Board database (ERBIS), Program Risk Management database and commercial launch provider quality system databases for items that require tracking, trending, and corrective actions. The Contractor shall identify processing trends that require corrective action and recurrence control, providing recommendations for corrective action plans to the Government. The Contractor shall input surveillance data, LSP vehicle data, and mission data into the SMA Database. The Contractor shall analyze data for adverse trends and provide technical interchange with the Government to immediately communicate concerns and significant issues as they arise.

#### **4.5.4 Surveillance Planning**

The Contractor shall create surveillance implementation plans for assessing internal and external commercial launch providers operations and processes. The external assessment shall include subcontractors/vendor processes where applicable. The Contractor shall develop insight monitoring tools to assess the health of the commercial launch providers processes.

### **4.6 Reviews**

The Contractor shall participate in design life cycle, hardware reviews, Pedigree, Production, Pre-Vehicle on stand or equivalent, mission specific reviews, and launch readiness reviews. The Contractor shall review and provide technical assessments on any build paper, test results, non-conformance reports, discrepancy history, failure analysis, waivers, deviations, and MRBs presented at reviews. The Contractor shall

maintain a status of open problems and failed hardware and provide technical interchange with the Government and immediately communicate significant issues that have the potential to increase the overall risk to LSP.

## **5.0 Launch Site Support Engineering**

The Contractor shall work with the NASA Launch Site Integration Manager (LSIM) for ground processing mission activities at the NASA provided PPF, and the Eastern and Western Ranges, as well as other launch sites. KSC/CCAFS and VAFB are the primary NASA launch sites. Alternate launch sites, including but not limited to: Reagan Test Site - Kwajalein Island; Kodiak Island – Alaska; Guiana Space Center – Kourou, French Guiana; Tanegashima Space Center – Japan, and Wallops Island - Virginia are examples of possible locations for NASA launches and are in scope of this contract. The Contractor shall provide launch site support documentation, launch site operational services, launch operations management support, and launch site administrative services. The NASA LSIM is the primary interface for spacecraft support requirements for LSP supported missions. The Contractor is the secondary interface. The Contractor shall represent the LSIM at various functions including meetings, teleconferences, design reviews, technical interchange and working group meetings when the NASA LSIM cannot attend. The LSSE requirements in this section (5.0) shall be performed at the request of the LSIM.

The Contractor shall interface with the spacecraft projects and other organizations including the Eastern Range (ER), Western Range (WR), Government/Commercial PPFs and commercial launch providers as required to perform the functions of the contract. The Contractor shall have a comprehensive knowledge and understanding of the objectives and responsibilities of these organizations and of other NASA centers involved with the spacecraft customers.

## **5.1 Launch Site Documentation**

The Contractor shall provide launch site documentation services.

The Contractor shall support the LSIM in gathering documentation requirements from the spacecraft customers by direct communication and through attendance at spacecraft and LSP meetings. The Contractor shall travel to the meetings if not held locally. Foreign meeting locations are in scope. These meetings include, but are not limited to the following: Project Kick-Off, various design reviews, Mission Integration Working Group, Ground Operations Working Group, Technical Interchange Meeting, Pre-Ship Readiness Review, Launch Site Readiness Review, Flight Readiness Review, Launch Readiness Review. The Contractor shall use the information gathered and provide documentation services as described in Sections 5.1.1 through 5.1.8.

The Contractor shall prepare spacecraft requirements using the Universal Documentation System (UDS) format. After LSIM approval, the Contractor shall

1 interface with the Range for distribution of requirements and responses, as detailed in  
2 DRD-XX, Requirements Coordination Output; DRD-XX, Mission Support  
3 Requirements Implementation Plan; and DRD-XX, Launch Site Support Plan.  
4

5 The Contractor shall input routine and expedited spacecraft requirements IAW DRD-  
6 XX, Requirements Coordination Output into the Range approved system for format  
7 and distribution (e.g. Latest Revision of Automated Support Requirements System  
8 (ASRS) per KSC-HB-GP60-3, for KSC).  
9

#### 10 **5.1.1 Launch Site Documentation Services**

11

12 The Contractor shall support the LSIM in coordinating with spacecraft customers  
13 in the identification, definition, and documentation of spacecraft requirements in  
14 the LSSP (DRD-XX, Launch Site Support Plan). The Contractor shall publish  
15 and distribute preliminary and baseline versions of the LSSP with revisions as  
16 required. The Contractor shall catalog and incorporate changes to the LSSP and  
17 support the LSIM when conducting detailed reviews with the spacecraft  
18 customer in order to refine the document. This includes publishing and  
19 distributing associated LSSP Amendment Forms (LAF) and the resulting as-  
20 flown LSSP. The Contractor shall maintain the LSSP template contained in the  
21 current version of LSP-F-333.01, LSSP Launch Services Program Boilerplate,  
22 Launch Site Support Plan.  
23

#### 24 **5.1.2 Program Introduction (PI) Document for the Range**

25

26 As required by the Range, the Contractor shall write the Program Introduction  
27 (PI) document and submit to the Range as specified in the DRD-XX,  
28 Requirements Coordination Output. The PI shall be submitted to the LSIM for  
29 review and approval prior to submittal to the Range.  
30

#### 31 **5.1.3 Program Requirements Document (PRD) for the Range**

32

33 The Contractor shall write the Program Requirements Document (PRD) for the  
34 Range as specified in the DRD-XX, Requirements Coordination Output. The  
35 PRD shall be submitted to the LSIM for review and approval prior to submittal  
36 to the Range.  
37

#### 38 **5.1.4 Mission Operations Requirements (OR) Document for the Range**

39

40 The Contractor shall provide input to the commercial launch providers in the  
41 writing of the Mission Operations Requirements (OR) document for submittal to  
42 the Range. For VAFB and KSC missions, the Contractor shall use the LSSP and  
43 PRD as well as further input from the LSIM and the spacecraft customer to  
44 define and develop specific spacecraft inputs for the commercial launch provider  
45 developed mission OR. The Contractor shall work closely with the commercial  
46 launch provider to input these requirements into the OR. The Contractor shall



review draft and published copies of the OR for correctness. The Contractor shall modify OR input as required.

#### **5.1.5 Spacecraft Operations Requirements (OR) Document**

The Contractor shall prepare the spacecraft OR document for spacecraft processed in NASA provided PPFs. The Contractor shall use the LSSP and PRD as well as further input from the LSIM and the spacecraft customer to develop a spacecraft-specific OR for spacecraft processing support in a PPF. The Contractor shall modify the spacecraft-specific OR as required.

#### **5.1.6 Base Civil Engineering Request for Environmental Impact Analysis at VAFB**

The Contractor shall prepare the Request for Environmental Impact Analysis (AF-Form 813) for assigned spacecraft. The Contractor shall submit this request to the appropriate base civil engineering office after review and approval from the LSIM. The Contractor will address USAF concerns and track the form through the review and approval process.

#### **5.1.7 Safety Advisory Function**

The Contractor shall review spacecraft customer requirements and advise the LSIM on safety impacts for spacecraft and launch site support operations. The Contractor shall review and provide comments to the LSIM on safety data package submittals I, II and III as defined in the current version of NPR 8715.7, Expendable Launch Vehicle Payload Safety Program. The review shall consider facility requirements, modifications, operations and implementation.

#### **5.1.8 Review of Commercial Launch Provider/Range-Provided Documentation**

The Contractor shall review commercial launch provider and Range documentation related to assigned missions.

The Contractor shall review the Interface Requirements Document (IRD) and commercial launch provider spacecraft Interface Control Document (ICD) for completeness and accuracy of spacecraft requirements. The Contractor shall submit comments to the NASA LSIM.

The Contractor shall review and provide comments to the NASA LSIM on Range-authored support documentation to ensure the Range addresses spacecraft customer requirements. This documentation shall include, but not be limited to the following:

- Statement of Support Capability (SoS), which is the Range response to the Program Introduction

- Program Support Plan (PSP), which is the Range response to the Program Requirements Document
- Operations Directive (OD), which is the Range response to the Operations Requirements Document
- Network Implementation Plan (NIP), which is the Range launch day communications implementation plan

## **5.2 Launch Site Integration Operational Services for VAFB**

The Contractor shall perform the operational support tasks listed in Sections 5.2.1 through 5.2.6 at VAFB in coordination with the NASA LSIM

### **5.2.1 NASA/Commercial PPF Readiness and Range Support**

The Contractor shall verify that LSSP requirements relating to spacecraft arrival are satisfied and report unsatisfied requirements to the LSIM. As part of this verification, the Contractor shall support the LSIM in facility walk downs prior to spacecraft arrival.

When required by the LSIM, the Contractor shall coordinate Range services required for spacecraft arrival and processing at the PPF. These Range services may include activities in support of the Range to include, but not be limited to security escorts, gate openings, sector blanking, radio frequency clearance and radio frequency authorization, and communications.

### **5.2.2 Spacecraft Transportation**

When required by the LSSP, in support of the LSIM, the Contractor shall provide launch site transportation services which may include but are not limited to: document and inspect transportation routes, procure and/or prepare commercial transportation vehicles, modify government furnished transportation vehicles, coordinate airfield services and landing permits, coordinate Range security vehicle escorts, and coordinate support from US Customs, Immigration and Agriculture Department for foreign spacecraft.

### **5.2.3 Spacecraft Operations in the PPF**

The Contractor shall coordinate the review of spacecraft customer test plans and technical operational procedures and track their approval status, when requested by the LSIM.

The Contractor shall perform the following tasks for spacecraft operations in the NASA provided PPFs when requested by the LSIM;

- Coordinate the distribution of keys/combinations
- Coordinate facility and safety training
- Coordinate shipping and receiving services

- Coordinate access lists and guard orders
- Prepare and distribute daily spacecraft activity status
- Maintain a spacecraft activities log book
- Coordinate the procurement and use of consumables, supplies, and materials
- Coordinate and schedule support for fueling operations
- Coordinate receipt and storage of radiation sources (e.g. calibration sources) with the USAF
- Receive, handle, store, ship and transport spacecraft pyrotechnics (under 1 lb.)
- Coordinate photo support from the USAF
- Coordinate support for operations beyond nominal work hours
- Monitor spacecraft activities and reschedule support in response to anomalies and changes in the plans
- Design, fabricate, assemble, test, and operate GFE as required by the LSSP to support spacecraft operations (e.g. nitrogen systems utilized for instrument purges, component cooling, and explosion proofing electrical systems.)

#### **5.2.4 Spacecraft Operations at the Launch Complex**

Prior to spacecraft arrival at the launch complex, the Contractor shall coordinate movement of spacecraft GSE. This task may require scheduling and directing technicians, vehicle drivers, and forklift/crane operators.

The Contractor shall plan for, procure, and distribute government furnished equipment, commodities, and garments to support spacecraft operations at the launch complex as defined in the LSSP. The Contractor shall also coordinate for those commodities and equipment requirements provided by sources other than the Contractor (e.g., the PPF contractor and commercial launch providers).

The Contractor shall assist the LSIM with launch complex access requirements including, but not limited to training, badging, security escort services, and tours.

The Contractor shall coordinate support for off-shift operations, monitor payload activities, and reschedule support in response to anomalies and changes in plans in coordination with the LSIM.

The Contractor shall design, fabricate, assemble, test, and operate GFE as required by the LSSP to support spacecraft operations (e.g. nitrogen systems utilized for instrument purges, component cooling, and explosion proofing electrical systems.)

**5.2.5 Post Launch**

The Contractor shall coordinate GSE movement, monitor spacecraft clean-up/close-out activities, and coordinate shipping services.

**5.2.6 Access Training and Badging**

The Contractor shall coordinate spacecraft PPF and launch complex access requirements including, but not limited to, training, badging, security escort services, and tours.

**5.3 Launch Site Integration Operational Services for KSC**

The Contractor shall perform the operational support tasks listed in Sections 5.3.1 through 5.3.6 at KSC in coordination with the NASA LSIM

**5.3.1 NASA/Commercial PPF Readiness and Base Support**

The Contractor shall verify that LSSP requirements relating to spacecraft arrival are satisfied and report unsatisfied requirements to the LSIM. As part of this verification, the Contractor shall support the LSIM in facility walk downs prior to spacecraft arrival.

**5.3.1.1 NASA/Commercial PPF Readiness and Base Support**

When requested by the LSIM, the Contractor shall coordinate USAF and KSC base services required for spacecraft arrival and processing at a PPF. These base services may include: security escorts, gate openings, sector blanking, radio frequency clearance, radio frequency authorization and communications.

**5.3.2 Spacecraft Transportation**

When requested by the LSIM, the Contractor shall coordinate the required base services which include but are not limited to: performing transportation route inspections, coordinating airfield services and landing permits, obtaining weather briefings, coordinating access requirements, arranging security escorts, and coordinating support from United States (U.S.) Customs, Immigration and Agriculture Department for foreign spacecraft.

**5.3.3 Spacecraft Operations in a NASA Provided Commercial PPF**

The Contractor shall coordinate the review of spacecraft customer test plans and technical operational procedures and track their approval status, when requested by the LSIM.

The Contractor shall perform tasks for spacecraft operations in the NASA provided commercial PPFs, when requested by the LSIM to include but not limited to the following:

- Coordinate the distribution of keys/combinations
- Coordinate facility and safety training
- Coordinate shipping, receiving and storage services
- Coordinate access lists and guard orders
- Prepare and distribute daily spacecraft activity status
- Maintain a spacecraft activities log book
- Coordinate the availability and use of consumables, supplies, materials and base support services
- Coordinate and schedule support for fueling operations
- Coordinate photo support
- Coordinate support for operations beyond nominal work hours.
- Monitor spacecraft activities and reschedule support in response to anomalies and changes in the plans.

#### **5.3.4 Spacecraft Operations at the Launch Complex**

Prior to spacecraft arrival at the launch complex, the Contractor shall coordinate movement of spacecraft GSE.

The Contractor shall plan and coordinate the provision of equipment and commodities to support spacecraft operations at the launch complex as defined in the LSSP.

The Contractor shall assist the LSIM with launch complex access requirements including, but not limited to training, badging, security escort services, and tours.

The Contractor shall coordinate support for operations beyond nominal work hours, monitor spacecraft activities, and reschedule support in response to anomalies and changes in plans in coordination with the LSIM.

#### **5.3.5 Post Launch**

The Contractor shall coordinate GSE movement, monitor spacecraft clean-up/close-out activities, and coordinate shipping services.

#### **5.3.6 Access Training and Badging**

The Contractor shall provide installation badging services for visiting spacecraft mission personnel that require access to KSC/CCAFS. The Contractor shall adhere to the badging process specified in KDP-KSC-P-3722, KSC Badging Issuance and Identity Verification Process. The Contractor shall coordinate PPF and launch complex access requirements including, but not limited to, training,

badging, security escort services, and tours. With the concurrence of the LSIM, the Contractor shall not be responsible for providing this coordination in those cases where the Jet Propulsion Laboratory (JPL) Resident Office at KSC accepts responsibility for this coordination.

## **5.4 Launch Site Administrative and Spacecraft Customer Services**

### **5.4.1 Launch Site Administrative Services**

The Contractor shall maintain, publish, and distribute on a monthly basis the KSC and VAFB Facility Utilization Plans (FUPs) which consist of a nine-year FUP for KSC and a six-year FUP for VAFB (DRD-XX, Facility Utilization Plan). At VAFB, the Contractor shall use the FUP in conjunction with documentation for spacecraft requirements to establish long range planning and determination of potential impacts on NASA facilities, safety or resources. At KSC and VAFB, the Contractor shall use the most current manifest data to write the FUP and submit the FUP to NASA for review and comment.

The Contractor shall develop and maintain an assignment matrix to list the LSIMs and Contractor personnel for each mission in flow. The Contractor shall identify in the assignment matrix the following positions: LSIM, Launch Site Support Engineering point of contact (primary and backup), and the point of contact responsible for providing input to the Universal Documentation System (UDS).

The Contractor shall coordinate and support a quarterly Launch Site Integration Mission Review (LSIMR) in support of the NASA Launch Site Integration Branch Chief. The Contractor shall develop and update a presentation package template to be used by the LSIMs for the LSIMR. The presentation shall include the following topics for assigned missions: general project information, documentation status, facility status, equipment status, communications status, procurement status, current schedule, relevant issues and concerns, and current point of contact list. The Contractor shall compile and format the charts into one cohesive LSIMR package to be presented by the LSIM's.

The Contractor shall provide secretariat services for launch site integration activities such as GOWG's and TIM's. These services shall include, but not be limited to the following: develop meeting minutes/actions and publish / distribute preliminary and final versions; prepare agendas and security access lists; coordinate meet-me numbers for teleconferences; arrange facility accommodations and presentation equipment; reproduce meeting materials and record attendance.

### **5.4.2 Launch Site Spacecraft Customer Services**

The Contractor shall develop and maintain spacecraft support documentation as identified in DRD-XX, Customer Information Documents with concurrence from NASA.

## **5.5 Spacecraft Contingency Support Requirements beyond Nominal Work Hours**

The Contractor shall provide support for mission related activities that occur beyond nominal work hours. The occurrence of these activities beyond nominal work hours is a result of spacecraft and commercial launch provider schedules including but not limited to the following: spacecraft processing at the PPFs, spacecraft/launch vehicle integration activities and launch campaign activities. The Contractor shall coordinate with NASA LSP for work beyond the established nominal work hours.

## **5.6 Guard Services at VAFB**

The Contractor shall provide continuous (24 hours) guard services for NASA-sponsored spacecraft while processing in a NASA PPF. The Contractor shall use NASA approved access lists and post orders detailing tasks to be performed to meet security requirements and exercise an emergency call tree.

## **5.7 Foreign National Escort Services**

The Contractor shall provide foreign national escort and transportation services IAW the current version of 30<sup>th</sup> SW Instruction 31-101 in support of spacecraft operating schedules while on federal installations (e.g. VAFB, KSC, CCAFS).

## **6.0 Technical Integration Services**

The requirements of this section shall be performed to support missions for which NASA has launch services insight and oversight responsibility. The Contractor shall provide mission integration coordination services and engineering technical integration services.

### **6.1 Mission Integration Coordination Services**

The Contractor shall provide mission integration coordination services as described under Sections 6.1.1 through 6.1.3. The contractor shall participate in ELV missions through active participation of the Mission Integration Teams (MIT).

#### **6.1.1 Integrated Mission Data, Documentation, and Schedules**

The Contractor shall collect and input mission information into Mission Web Pages for access by LSP personnel. Mission data shall include, but not be limited to mission description, mission schedules, points of contact, list of mission deliverables with corresponding web links, links to spacecraft websites, and links to documentation developed for the mission. The Contractor shall

1 collect and input mission information into the mission folder within the MIT  
2 Coordination Folders in the shared drive for NASA internal use.

3  
4 The Contractor shall prepare a mission plan for missions immediately preceding  
5 the Award and Authority To Proceed (ATP) of the Launch Services Task Order  
6 (LSTO). The mission plan shall be accessible to spacecraft customers through a  
7 controlled website.

8  
9 Using inputs from the MIT, the Contractor shall prepare and maintain an  
10 integrated mission schedule that shall be compatible with Milestones  
11 Professional, or equivalent scheduling software used by the LSP. The Contractor  
12 shall evaluate mission integration schedules to identify potential schedule  
13 conflicts and inform NASA.

14  
15 The Contractor shall provide a tracking system for the Contract Deliverables  
16 Requirements Lists (CDRLs) that are received/reviewed by the MIT, as noted in  
17 DRD-XX, Access to Contract Data, CDRL Review Tracking. The system shall  
18 include, but not be limited to date of receipt from the commercial launch services  
19 provider or spacecraft customer, date delivered to the responsible reviewer, date  
20 when reviewed document is received back, date delivered to the commercial  
21 launch services provider or spacecraft customer as applicable, and identify  
22 relevant issues related to the mission.

23  
24 The Contractor shall submit spacecraft customer deliverables and LSP review  
25 results to the LSP Library.

26  
27 The Contractor shall submit a cumulative summary tracking report as input for  
28 MIWG presentation packages.

29  
30 The Contractor shall maintain the LSP-Plan-To-Manifest based on the official  
31 NASA Headquarters Flight Planning Board (FPB) Manifest. This document  
32 includes LSP launch dates and launch slips as well as other significant NASA  
33 launches (e.g. Human Space Flight related).

34  
35 The Contractor shall maintain an electronic web-based NASA LSP Payload  
36 Planner's Guide using information provided by the Flight Projects Office for  
37 commercial launch services providers.

### 38 39 **6.1.2 Administrative Services**

40  
41 The Contractor shall input data into the Flight Project Office Website to include  
42 administrative and schedule items such as staff notes and administrative actions.

43  
44 The Contractor shall develop documentation packages (e.g. Risk sheets, MIWG  
45 presentations) for mission management and MIT activities to include, but not be



limited to meetings, briefings, reviews and other activities that are at the Agency, Program, Project, and MIT levels.

The Contractor shall create, update, and distribute MIT assignment matrices as noted in DRD-XX, Access to Contract Data—MIT Functions, to include members of the MIT and other support personnel for missions in flow.

### **6.1.3 Secretariat Functions**

The Contractor shall provide secretariat function services for Lessons Learned reviews to include, but not be limited to the following: develop meeting minutes/actions and publish/distribute preliminary and final versions, prepare agendas, coordinate meet-me numbers for teleconferences, arrange facility accommodations and presentation equipment, reproduce meeting materials, and record attendance. The Contractor shall assemble documentation and input into the NASA LSP Lessons Learned Database using inputs from the MIT, the extended MIT, and the launch team. The Contractor shall provide secretariat function services for MIT Functions to include, but not be limited to the following: prepare agendas, coordinate meet-me numbers for teleconferences; internet meeting capability (e.g., WebEx tool or similar), arrange facility accommodations and presentation equipment, reproduce meeting materials, record attendance, develop meeting minutes/actions and publish/distribute as noted in DRD-XX, Access to Contract Data.

The Contractor shall coordinate facility arrangements for KSC-hosted customer and supplier integration working groups and technical interchange meetings.

## **6.2 Engineering Technical Integration Services**

### **6.2.1 Engineering Review Board Services**

The Contractor shall provide technical services to assist in organizing information, scheduling, and documenting engineering review board's activities. The Contractor shall include measures for control of proprietary commercial launch services provider data. The Contractor shall provide expertise of launch vehicle systems and spacecraft design configuration while performing technical integration services. These services include, but are not limited to the following:

- Manage ERB tracking number assignments, as described in DRD-XX, Access to Contract Data—ERB Functions.
- Maintain system compatibility for electronic records of ERB presentations, track action closures and recommendations.
- Organize ERBs, including reserving conference facilities and scheduling teleconferences as required.
- Record, organize, and track ERB actions and recommendations.

The Contractor shall organize and input data in the ERB Database to include ERB Results & Recommendations, Engineering Review Summaries, and LSP information and flight/test telemetry data. Accordingly, the Contractor shall perform the following:

- Organize and maintain LSP flight and test data archives.
- Organize and maintain engineering technical document library.
- Develop and maintain secure systems for accessing commercial launch services provider's flight data and technical document storage systems.
- Create, maintain, and modify database-reporting forms for use by the engineering team to fill in. The Contractor shall input engineering team forms into the databases.
- Conduct research in engineering database on Government specified criteria and create reports.

#### **6.2.2 Administrative Services**

The Contractor shall provide technical integration services to include, but not be limited to the following:

- Collect, research, organize, and document technical requirements and recommendations.
- Develop schedules, create reports, organize technical interchange meetings, and create presentations.
- Collect, organize, and document technical requirements and recommendations required to develop engineering processes and procedures.
- Prepare draft process documents for review and approval by the engineering management team.
- Create presentation charts and schedules for monthly status reports.
- Analyze and evaluate commercial launch provider production and manifest schedules for consistency with NASA schedules and create reports describing changes and schedule conflicts.

#### **6.2.3 Launch Engineering Team (LET) Services**

The Contractor shall provide technical services to the Launch Engineering Team (LET) designated to support NASA and NASA-sponsored LSP launches to include, but not be limited to the following:

- Organize LET member deployment on console during launch day activities.
- Organize and document requirements for communications and data inputs to be used in launch support facilities.
- Create and maintain LET deployment schedules during launch campaigns.
- Develop and maintain launch vehicle telemetry data display tools, IRIS and Winplot, to reflect current and appropriate launch vehicle and ground configurations.

- Prepare launch support guidelines for the LET.
- Document, organize, and track internal and external action items that are significant to the LET in preparation for readiness reviews during the launch campaign.
- Coordinate Technical Interchange Meetings (TIMs) to include participation from offsite engineering organizations. Document, organize, and track internal and external action items that are relevant to the LET.
- Organize and document LET inputs to the Lessons Learned review.
- Collect, organize, and document technical requirements and recommendations from the engineering team and from various launch support personnel to define and document telemetry data archive, transfer, and conversion requirements.
- Reference DRD-XX, Access to Contract Data-LET Functions for data access noted above.

### **6.3 Launch Operations Management Services**

The Contractor shall provide launch operations management services in support of the NASA Launch Director.

The Contractor shall coordinate between the commercial launch provider, NASA Launch Director, LSIM, and spacecraft to produce the Launch Management Coordination Meeting (LMCM) presentation package (DRD-XX).

The Contractor shall: plan and coordinate Mission Dress Rehearsals (MDR); conduct MDR's; and act as the simulation supervisor and/or rehearsal anomaly team member for MDR's.

The Contractor shall coordinate NASA and spacecraft input to the commercial launch provider launch countdown procedures, mission constraints documents, and console operator notebooks and review for consistency with the LMCM presentation package.

The Contractor shall coordinate and schedule launch countdown rehearsals for the spacecraft customer in the weeks prior to launch.

The Contractor shall review Range and other documentation and participate in working group meetings when requested by the NASA Launch Director.

The Contractor shall participate in Range scheduling meetings and commercial launch provider manifest coordination meetings as requested by the NASA Launch Director.

The Contractor shall coordinate facility requirements and room configuration for readiness reviews.

The Contractor shall coordinate with the commercial launch provider, NASA, and the spacecraft customer to integrate readiness review presentation charts.

## **7.0 Communications and Telemetry**

The Contractor shall provide engineering, operations, and maintenance of NASA LSP communications and telemetry (C&T) systems in operational areas for NASA supported LSP missions including commercial and other spacecraft customers of the NASA LSP Program. Communications systems are considered to be: audio, video, data, timing and networks. The Contractor shall be responsible for the following operational areas:

- LSP Data Center at Hangar AE and Building 836
- Mission Directors' Center (MDC) at Hangar AE and Building 836
- Launch Vehicle Data Centers (LVDC) at Hangar AE and Building 836
- Communication Rooms at Hangar AE and Building 836
- Spacecraft Customer support areas of Hangar AE and Building 836
- Launch Site Support Trailers (LSST) on Eastern and Western Ranges
- NASA Radio Frequency (RF) and Microwave Relay Site at Building 811

NASA LSP customers may be located in the following locations:

- Hangar AE, CCAFS
- Building E&O, CCAFS
- Building 836, VAFB
- Building 840, VAFB
- Space Launch Complexes on the Eastern or Western ranges, Kodiak Launch Complex (KLC), Wallops Flight Facility (WFF) and Ronald Reagan Ballistic Missile Defense Site (RTS), Kwajalein Atoll, Republic of the Marshall Islands, NASA or Commercial PPFs on or near the Eastern or Western Ranges
- Launch Site Support Trailers (LSST)

C&T work for KSC and VAFB is defined as the engineering, operations, and maintenance activities to ensure the communications and telemetry systems are ready to support operations.

At times, support to mission testing and launch activities will be reduced, especially at VAFB. During these periods the activities required to maintain the readiness of communications and telemetry systems to support operations will be decreased. Other activities shall be supported during these periods including, but not limited to, maintenance and repair of telemetry and communications equipment, ensure the readiness of mission spacecraft customer test equipment, and perform configuration and validation of communications circuits and equipment for future mission support.

## 7.1 Operation & Maintenance of Communications and Telemetry Systems

Within the operational areas listed in Section 7.0, the Contractor shall be responsible for:

- Power-up
- Power-down
- Configuration Control
- Operation and Maintenance
- Troubleshooting and repair for equipment
- Sustaining Engineering
- Non-interruptible power supply systems

For missions supported by NASA, the Contractor shall be responsible for the following communications and telemetry support activities:

- Disposition Requirements
- Engineering and Planning
- Setup and Activation
- Maintain Configuration Control
- Monitoring and Logging
- Maintenance
- Troubleshooting and repair
- Breakdown and Storage
- Monitoring non-interruptible power supply systems

The Contractor shall provide troubleshooting and platform services for LSP supported missions or activities. In facilities with non LSP communications transport (KSC, Range, Commercial, etc), the Contractor shall coordinate, schedule and validate services to meet spacecraft customer requirements. The Contractor shall create a spacecraft customer interface for data services to adapt spacecraft customer equipment to the facility communications transport. The Contractor shall notify NASA LSP when a failure or problem will impact spacecraft operations.

The Contractor shall permit specific equipment to remain operational and un-attended during non-supported hours when requested by NASA. The Contractor shall report to NASA the risks associated with unattended operation of equipment and shall take steps to mitigate risks.

The Contractor shall provide maintenance management services and implement a comprehensive proactive maintenance program incorporating the Reliability-Centered Maintenance (RCM) philosophy for Telemetry and Communications systems and equipment, as described in the current version of NPR 8831.2, Facilities Maintenance and Operations Management. Implementation of a RCM program shall ensure

continued operations for mission support and long-term Government asset protection and prevent the consequences of degradation and critical equipment breakdowns.

Within six months of contract award, the Contractor shall provide a Mission Operations Director (MOD) Training Program (MODTP) which will include but not be limited to: Day Of Launch (DOL) operations, voice system operations, video system operation, Iris display operations, emergency protocols, timing system operations, countdown clock operations and decorum (DRD-XX).

### **7.1.1 Communication Systems**

Utilizing Installation-Provided Property (IPP), the Contractor shall provide the following services to NASA LSP supported missions and activities:

- Voice
- Video
- Data
- Timing
- Networks
- Non-interruptible power supply systems

The Contractor shall operate and maintain assigned audio and video systems for LSP supported missions and activities. The Contractor shall schedule, build and validate required voice communications nets. The Contractor shall validate voice communications services for end instruments within LSP facilities or facilities where LSP personnel are supporting an operation. The Contractor shall create and maintain video recordings of launch attempts. The Contractor shall make and deliver copies of recordings as requested by NASA. With NASA concurrence, the Contractor shall create and implement a schedule for the storage and destruction of recordings.

The Contractor shall request, schedule and validate communications circuits and support from the responsible organizations to meet requirements external to Hangar AE and Building. The Contractor shall coordinate directly with outside organizations to assist in the activation and troubleshooting of assets. The Contractor shall field support equipment to outfit communications circuits to satisfy mission requirements. This support shall include communications services local to the facilities, as well as communications connectivity to other facilities as previously identified. The Contractor shall support the activation and troubleshooting of cross-country communications circuits through commercial and Government communications service providers.

The Contractor shall provide engineering support for installed communications equipment. This shall include developing and maintaining drawings, procedures, and documentation. The Contractor shall provide communications engineering support for LSP supported missions and activities. This shall include designing

communications circuits and network implementations as required by the LSSP Communications Annex. The Contractor shall be responsible for configuration management and control for installed hardware and supported communications circuits.

The Contractor shall operate and maintain cable plant and end equipment within the LSP ground station facilities including but not limited to Single-mode fiber, Multi-mode fiber, Unshielded Twisted Pair (UTP) copper, Coax/Twinax, RF, waveguide, and GN2 K-bottles for the waveguide purge system.

The Contractor shall interface with local and long-line providers such as USAF contractors at CCAFS and VAFB, KSC and NASA ground network, and commercial carriers for meeting external communications requirements including, but not limited to scheduling, testing, and validation.

The Contractor shall provide real-time end-to-end testing and troubleshooting of communication links. The Contractor shall maintain a comprehensive set of tools and test equipment (such as oscilloscopes, meters, and analyzers) in sufficient quantity to conduct troubleshooting and testing activities for multiple operations in separate locations. The Contractor shall transport and deploy, in 30 minutes or less, test equipment to spacecraft customer locations at CCAFS, KSC, and VAFB.

#### **7.1.2 Systems Monitoring and Logging**

The Contractor shall monitor the voice, video, and data systems. The Contractor shall perform network monitoring for systems IAW NPR 2810.1 (as revised) Security of Information Technology and the applicable IT Security Plans specified in Appendix X including, but not limited to the following items:

##### **7.1.2.1 Fault Management**

The Contractor shall detect, log, isolate, and correct faults to keep the network operating effectively. The Contractor shall perform network diagnosis reporting and troubleshooting, event alerting and device management and event correlation. The Contractor shall identify interface errors and perform root cause analysis.

##### **7.1.2.2 Configuration Management**

The Contractor shall monitor network and system configuration information to track and manage network operation on various versions of hardware and software. The Contractor shall develop device configuration templates and configure system storage devices. The Contractor shall maintain current system configurations, drawings and procedures in a centralized location available to either KSC or VAFB personnel. The

Contractor shall provide detailed system views. The Contractor shall perform configuration comparisons, checking and change tracking, and restoration of configured system devices. The Contractor shall document system changes. The Contractor shall review and compare system configurations prior to mission Internal Readiness Reviews (IRR). The Contractor shall, upon NASA LSP request, provide system changes between two specific dates.

#### **7.1.2.3 Asset Management**

The Contractor shall measure network utilization parameters to regulate individual or group users. This includes but is not limited to inventory of system device by manufacturer serial number, monitor system services, monitor the load contributed by each system (both source and sink), perform hardware and software inventory and management services and track device locations. The Contractor shall maintain system spares. The Contractor shall present critical systems status 24 hours prior to and again during Mission IRR.

#### **7.1.2.4 System Performance Management**

The Contractor shall measure various aspects of system performance to ensure the overall system performance is optimized. The Contractor shall monitor and report Service Level Agreements (SLA) with internal and external partners ensuring that LSP systems are in compliance with the SLAs. The Contractor shall present a detailed SLA report on critical mission systems during Mission IRRs. The Contractor shall perform trend analysis, capacity planning, traffic volume analysis, flow analysis and response time analysis. The Contractor shall develop system capacity planning reports upon request. Capacity planning reports shall include but are not limited to: trend analysis of system resources, services, and processes, traffic volume, flow analysis, and response time analysis.

#### **7.1.2.5 Security Management**

The Contractor shall implement and maintain access control to network resources. The Contractor shall perform authorization analysis, intrusion and vulnerability detection, track users log on/ log off and user changes. The Contractor shall review system log information on a daily basis, searching for unauthorized access to systems. The Contractor shall provide an Authorization analysis report monthly, or more often upon request. The Authorization report shall include; user log on\off times, log on failed attempts, top user, top system device, and time.



### 7.1.3 Telemetry Systems

The Contractor shall provide time-tagged reception, recording, processing, and display of incoming telemetry data. Telemetry data shall consist of: FM/FM telemetry, PCM/FM telemetry and separate analog signals. This data can be received via hard-line, fixed RF antenna, NASA Integrated Services Network (NISN), Internet-protocol Operational Network (IONET), or modem. The Contractor shall provide playback telemetry data support as required by NASA.

Equipment available to accomplish this task includes RF receivers, discriminators, bit synchronizers, decommutators, wideband analog recorders, and a combination of commercially available and government developed software for display and processing.

The Contractor shall provide operation, regular maintenance, and sustaining engineering of assigned NASA LSP RF assets at KSC, CCAFS, and VAFB such as, but not limited to, receivers, antennas, modulators and demodulators. The Contractor is expected to participate in activities by other NASA support contractors for troubleshooting and major RF system upgrades.

The Contractor shall plan, develop, maintain, and troubleshoot software on the telemetry processing systems as required.

The Contractor shall create and maintain the required initialization files to process and display incoming telemetry. These initialization files shall include but are not limited to measurement descriptions, conversion coefficients, frame descriptions, and telemetry display page descriptions. These files shall be available on the administrative LAN to NASA with security controls.

The Contractor shall maintain an interface with launch service contractors to maintain correct initialization of telemetry processing equipment and conversion of initialization data from launch service contractors proprietary data formats. The Contractor shall provide control of sensitive and proprietary data.

The Contractor shall perform software maintenance on the government developed telemetry processing software to enhance capability and performance as requested by NASA. The current system is based upon standard workstations and servers running Microsoft Windows operating systems. Software is written using C/C++.

The Contractor shall create and maintain an archive of processed telemetry data capture files of launches and major tests. These capture files shall include PCM telemetry frames recorded and FM and analog data received. The Contractor shall archive processed telemetry to administrative LAN based servers and maintain the telemetry data in an appropriate format for subsequent analysis by

NASA. Telemetry data shall be available to NASA on the administrative LAN with security controls.

The Contractor shall provide recording and reproduction of unprocessed telemetry data and timing. The Contractor shall make copies and deliver this data as requested by NASA. With NASA concurrence, the Contractor shall create and implement a schedule for the storage and destruction of data.

The Contractor shall obtain approval from the TICCB before changes, life cycle upgrades or enhancements are implemented to the telemetry processing system configuration. The Contractor shall participate in TICCB meetings and provide support and assistance to the TICCB with regard to operation and maintenance of LSP telemetry processing systems.

#### **7.1.4 Repairs for Installation Accountable Property**

The Contractor shall be responsible for maintenance and repairs on Communications and Telemetry Installation Accountable Property (IAP). For subcontracted Maintenance and Repairs (MAR) over \$1000, the Contractor will be reimbursed for incurred costs on a non-fee bearing basis. The Contractor shall report maintenance and repair costs in a separate Contract Line Item Number (CLIN), the MAR CLIN. The Contractor shall coordinate MAR purchase requests with NASA to accomplish the repairs in a cost effective and prompt manner.

The Contractor shall utilize in-house labor to the fullest extent possible to effect repairs of IAP under \$1000 per repair.

Representative examples of allowed maintenance include hardware and software upgrades to improve longevity of systems, maintenance agreements with equipment manufacturers for technical support, streamlined equipment repair and other maintenance services, software patch support, firmware upgrades, component parts incidental to the repair work, calibration, and licensing associated with use of the products.

The Contractor shall establish maintenance, repair, service agreements and calibration agreements/subcontracts necessary for the operation and maintenance of PWS Section 7.0 equipment that is identified in Appendix X.

#### **7.1.5 Configuration Management**

The Contractor shall create and maintain a complete set of detailed drawings for communications circuits. For scheduled operations, the Contractor shall create and maintain a complete set of documentation identifying the configuration of support equipment required for the operation including but not limited to telemetry lab equipment, telemetry processing and display computers, digital

voice switch, MPLS, video switch, and Channel Service Unit / Data Service Unit (CSU/DSU), Multiplexers, and network equipment. The Contractor shall utilize Microsoft (MS) Office products including MS VISIO and Sharepoint and store released copies on the LSP Sharepoint server.

## **7.2 Mission Scheduling, Planning, and Status Reporting**

The Contractor shall create, maintain, and implement an integrated schedule for the services provided for scheduled missions. This schedule shall forecast estimated completion dates for open and pending activities for missions identified for support within the next 6 months.

The Contractor shall provide implementation plans for meeting mission communications and telemetry requirements including design drawings, procurement documentation, resource allocation, agreements with external service providers, and detailed scheduling.

The Contractor shall maintain the LSP telephone status message. This status message shall detail the schedule for operations for the next seven days.

The Contractor shall participate in technical interchange meetings to provide status to NASA and to receive requirements. The Contractor shall conduct facility and console familiarization presentations.

The Contractor shall participate in launch readiness reviews and briefings, and provide presentations during these reviews on facility and equipment readiness status. The Contractor shall provide readiness reports and status to critical activity review boards including testing results, training, certification, hardware and software status, and procedures. The Contractor shall provide to NASA a detailed C&T IRR with status of equipment and resources required for the launch.

This C&T IRR shall include but not be limited to:

- Configuration of support equipment
- Version identification of software
- Identification of technical leads
- Issues/concerns which may impact launch support
- Brief summary of equipment, resources, or services which shall be used for the “first time” to support a launch
- Brief review of problems which impacted the last launch and the actions taken as a result of these problems
- A formal declaration of the capability to support from the Contractor

### **7.2.1 Flight Operations**

The Contractor shall prepare documentation and input into the Mission Telemetry Assets Database to determine if additional launch telemetry assets are required. The Contractor shall use the current version of LSP-PD-120.5, Launch Telemetry Requirements as a guideline. The Contractor shall assemble requirements packages and trajectory documentation for additional tracking assets, schedule, attend associated teleconferences, and assist in the preparation of memorandums and/or briefing notes.

## **7.2.2 Review of Commercial Launch Provider/Range Documentation**

For LSP supported missions and activities, the Contractor shall review and provide comments to the NASA Mission Communications Engineer (MCE) on commercial launch provider and Range-authored support documentation to ensure the LSP requirements will be met. This documentation shall include, but not be limited to the following:

- Draft Operations Directive (OD) which is the Range response to the Operations Requirements Document
- LSSP Communications Annex
- Operations Directive (OD)
- Network Implementation Plan (NIP), which is the Range launch day communications implementation plan (VAFB only)
- Spacecraft Project Requirements Document

The Contractor shall provide an Integrated Communications Requirement Document (ICRD) IAW DRD-XX to the NASA MCE and the commercial launch provider for LSP supported missions and activities. The Contractor shall provide to the NASA MCE and the NASA Launch Manager a Launch Team communications configuration for LSP supported missions and activities.

The Contractor shall create and make available a written post-test briefing for launch attempts and major tests including, but not limited to Wet Dress Rehearsals, Simulated Flights, and Flight Program Verifications. This briefing shall include but not be limited to the following:

- Descriptive information to identify the vehicle and a brief account of support provided
- Success or failure of test and reason for failure
- Summary of successes and problems with support
- List of consumables

The Contractor shall provide written problem reports describing loss of support and including but not limited to the following:

- Symptoms of problem
- Diagnosis of problem

- Solution taken to correct problem
- Impact to ability to support with specific attention to loss of capability for supporting major tests and launches

The Contractor shall keep a log of activities related to services and operations.

Required logs, briefings, reports, drawings and schedules shall be made available to NASA in an electronic format and shall be maintained in an on-line archive available over the administrative LAN, IAW DRD-XX, Access to Data. The Contractor shall protect records against unintentional alteration or loss. The Contractor shall secure records from inappropriate access by personnel outside of NASA LSP.

### **7.3 Technical Point of Contact**

For each mission, the Contractor shall provide a Point of Contact (POC) for the following operations:

- Telemetry operations
- Real-Time data processing
- Communications
- RF Systems operations
- Mission Operations Director
- Data Impound Coordinator
- IT Security Auditor
- IT System Administrator
- Flight Operations Coordinator

These POC's shall be responsible for the following:

- Represent their areas of expertise at the internal C&T launch readiness review
- Coordinate operation of the service during major tests and launch attempts for the mission
- Provide NASA status on Contractor support for the mission
- Provide the post launch briefing for services provided for the launch
- Provide an electronic Problem Report and resolution for issues and concerns that affected mission support (DRD-XX)

The Contractor shall notify NASA of the selection of the POC's before mission planning and support begins. The Contractor shall notify NASA of changes to the designated POC's immediately. To the maximum extent possible, the Contractor shall promote cross training of personnel to avoid single failure points.

### **7.4 Development Projects**

The Contractor shall support NASA-led C&T development efforts. The Contractor shall support development activities by providing operation of the facility systems including but not limited to voice, video, data, networks and timing and by

1 participating in design reviews to ensure operations concerns are factored into system  
2 design. The Contractor shall monitor the life cycle of equipment to upgrade and  
3 replace support equipment and provide advice to NASA concerning planning for  
4 replacement.

5  
6 The Contractor shall provide real-time and playback telemetry data support,  
7 communications, timing, and equipment operation and maintenance support to NASA  
8 development efforts. The Contractor shall create and implement a plan to test NASA  
9 developed systems in preparation for replacement of existing Data Center, real-time  
10 data system, or communication production systems (DRD-XX). This test shall be  
11 created under the guidance and concurrence of NASA. Upon successful completion  
12 of qualification testing, the Contractor shall accept the operation of equipment for use  
13 in providing C&T services to NASA LSP supported customers. The Contractor shall  
14 coordinate the excess process for obsolete production systems IAW KNPR 4000.1,  
15 Supply and Equipment System Manual.

#### 16 17 **7.5 Communications and Telemetry Computers and Networks Support**

18  
19 The Contractor shall operate and maintain Data Center computers running Windows  
20 and Unix and shall maintain the capability to plan, setup, administer, and troubleshoot  
21 operational Ethernet networks. The Contractor shall designate an Information  
22 Technology Point of Contact (IT POC) for the coordination of operational IT  
23 activities. The Contractor IT POC shall have the appropriate skills and certifications  
24 to accomplish C&T computers and networks support. The Contractor shall provide IT  
25 security support IAW section 9.3 of this PWS.

#### 26 27 **7.6 Communications and Telemetry Support Beyond Nominal Work Hours**

28  
29 The Contractor shall provide support for LSP supported mission related activities that  
30 occur beyond nominal work hours. The occurrence of these activities after nominal  
31 work hours is a result of spacecraft and commercial launch provider schedules  
32 including but not limited to the following: spacecraft processing at the PPFs,  
33 spacecraft/launch vehicle integration activities and launch campaign activities. The  
34 Contractor shall coordinate with NASA LSP for work beyond the established nominal  
35 work hours.

36  
37 The Contractor shall secure approval from NASA LSP before commitments are made  
38 to non-LSP organizations as defined in work for others.

#### 39 40 **7.7 On-Call Troubleshooting and Repair Support**

41  
42 The Contractor shall provide a single POC available after nominal work hours to  
43 provide troubleshooting and repair of unattended equipment for which the Contractor  
44 is responsible. The Contractor shall remain available for contact by the NASA LSP  
45 spacecraft customer. The Contractor shall provide written status and problem reports

to NASA LSP at the completion of the on-call support detailing problems and resolutions during the on-call period (DRD-XX).

#### **7.8 Voice and Data Support via Satellite**

The Contractor shall provide a commercial satellite link from one of the NASA LSP ground stations to a remote facility in support of an expendable launch vehicle mission. This link will transport launch vehicle, spacecraft, or ground systems voice and data from the remote facility to the Contractor-operated facilities at either Building 836 at VAFB, CA, or Hangar AE at CCAFS, FL. This link shall be either one-way (simplex) or two-way (full-duplex) as required for mission support. Technical details shall be coordinated through the NASA LSP Chief of Ground Systems Integration or delegate.

#### **7.9 Communications and Telemetry Website**

The Contractor shall provide web-based information and reporting services related to C&T activities, systems, and status. The Contractor shall assist the NASA system administrator on maintenance of the web and database servers. The Contractor shall maintain replication of C&T data files and electronic documents between the operational servers and the Sharepoint site. The Contractor shall assist LSP users with problems relating to accessing the site. The Contractor shall maintain required configuration management documents and lists for C&T systems. The Contractor shall maintain an electronic calendar on the Sharepoint site detailing facility support times and dates for Hangar AE and Building 836. The Contractor shall maintain a problem reporting and action tracking system related to C&T operations and equipment. The Contractor shall maintain a log of operations significant events, problems, and issues for distribution to LSP customers of C&T services.

#### **7.10 Telemetry, Information Technology and Communications Control Board (TICCB)**

The Contractor shall comply with the most recent, released version of LSP-PLN-35 430.01, Launch Services Program Telemetry, Information Technology and Communications Control Board (TICCB) Plan. The Contractor shall attend and support TICCB meetings and shall provide experience and lessons learned towards the continuous improvement of LSP's C&T systems. The Contractor shall comply with TICCB policy and actions with regards to the procurement, installation, operation, management, and IT security of LSP C&T equipment.

#### **8.0 Vandenberg Air Force Base Unique Support**

The Contractor shall provide planning, management, manpower, capabilities, and certifications to operate and maintain facilities, facility systems, and support equipment assigned to NASA at VAFB to provide base services and to satisfy support requirements for NASA LSP customers and NASA resident and transient personnel.

The Contractor shall perform engineering, operations, and maintenance activities to maintain NASA facilities, facility systems, and support equipment ready to support operations. Contractor support shall be available during nominal work hours as defined in Section 1.3.2.3. VAFB operations support outside the nominal work hours shall occur in support of mission testing and launch activities; operations, troubleshooting and repair of facilities, facility systems and equipment; unplanned facility events; and LSP and spacecraft customer activities.

There may be extended periods when Contractor support to mission testing and launch activities will not be required. Activities supported during times of minimal mission testing and launch will include but not limited to backlog of maintenance and repair of facilities, facility systems, and support equipment; maintaining the readiness of spacecraft customer test equipment; and advanced configuration of facilities, facility systems, and support equipment for mission support.

The Contractor shall provide a single point-of-contact (POC) available after nominal work hours to provide short-term troubleshooting and repair of unattended equipment for which the contractor is responsible in support of spacecraft testing. The Contractor shall remain at all times available for contact by the NASA spacecraft customer. The Contractor shall provide written status and problem reports to NASA at the completion of the on-call support detailing problems and their resolution during the on-call period.

The Contractor shall conduct a weekly planning and coordination meeting to review activities affecting Resident Office personnel and support operations. This meeting will include but not be limited to a review of pertinent safety issues and concerns, a review of near term scheduled activities and a solicitation of input from attendees. The Contractor shall produce an operations support schedule for review at this meeting. The schedule shall include but not be limited to scheduled meetings, teleconferences, events, activities and operations. The schedule will address NASA facilities and NASA mission support activities occurring at non-NASA facilities.

The Contractor shall conduct a weekly facility planning meeting to review operations and maintenance activities affecting NASA facilities. The Contractor shall produce for this meeting a listing of pertinent operations and maintenance issues and a listing of active Base Civil Engineering work requests for review at this meeting.

## **8.1 Facilities, Facility Systems, and Support Equipment at VAFB**

### **8.1.1 Operations and Maintenance**

The Contractor shall provide operations and maintenance for assigned facilities at VAFB as specified in Appendix X.



The Contractor shall be responsible for the safe, reliable, and efficient operation of assigned fixed and portable structures, facilities, systems, and equipment to include, but not be limited to the following:

- Electrical distribution systems
- Portable and fire suppression water systems
- Septic systems
- Furniture
- Lighting systems
- Non-interruptible power supply systems
- Backup electrical generation systems
- Heating, ventilation, and air conditioning systems including boilers, chillers, air handlers, and associated plumbing, ducting, and control systems

The Contractor shall establish maintenance, repair, and calibration agreements/subcontracts for the operation and maintenance of the facilities, facility systems and equipment identified in Appendix X and Appendix X. The Contractor shall act on NASA's behalf as the primary interface for maintenance, operations, planning, scheduling and coordination of USAF Base Civil Engineering activities affecting NASA facilities and facility systems identified in Appendix X.

The Contractor shall operate and maintain the Facility Management System (FMS) for the monitoring and control of facilities, systems, and equipment by authorized personnel. The Contractor shall ensure the FMS computer system and associated network are maintained and tested to ensure operational readiness when flight hardware is in a NASA facility. The Contractor shall ensure that the FMS computer system and associated software are and remain compatible.

The Contractor shall operate and provide routine maintenance of VAFB IPP. The Contractor shall operate lifting equipment such as cranes and hoists and perform proof-load testing. When required, The Contractor shall proof-load spacecraft customer equipment. The Contractor shall document results and provide NASA access to data related to maintenance records, troubleshooting efforts, problem causes, and corrective actions taken, proof-test certificates, operational and test procedures, and test data records IAW DRD-XX, Access to Contract Data, Maintenance Records.

The Contractor shall provide operation and maintenance management of two NASA-owned 6,000-psi tube-bank trailers at VAFB. Maintenance shall be performed at a level to maintain overall certification of trailers and pressurized components. Personnel shall be certified for work on high-pressure gas systems to perform tube-bank operation. The Contractor shall make connections for high-pressure gas supply at support locations on VAFB and shall configure components such as high-pressure hoses, filters, regulators and gauges including sampling for analysis. The Contractor shall transport the tube-banks to locations

1 inside VAFB for pressurization and/or for connection to a supply or purge  
2 systems as required for NASA mission support. The Contractor shall maintain  
3 certification and maintenance records per DRD-XX, Pressure Vessel/System  
4 Certification Report.  
5

6 The Contractor shall provide a Certification of Facility Readiness as defined in  
7 DRD-XX, Certification of Facility Readiness for facilities used to support  
8 spacecraft processing.  
9

10 The Contractor shall collect, analyze, and prepare utility consumption reports  
11 and plans for submission to the Government IAW DRD-XX, Energy  
12 Conservation Plan/Report.  
13

14 The Contractor shall operate and maintain the existing carpentry and machine  
15 shop areas to provide services to NASA in support of the operations and  
16 maintenance activities for facilities, facility systems, and support equipment.  
17 The Contractor shall operate and maintain the existing paint booth IAW local,  
18 state, and federal regulations for such equipment.  
19

20 The Contractor shall provide electrician services to include, but not be limited to  
21 troubleshooting, reconfiguration, modification, and general maintenance of  
22 facility electrical systems.  
23

24 The Contractor shall be responsible for repairs on VAFB Installation  
25 Accountable Property (IAP), Appendix XX. For subcontracted Maintenance and  
26 Repairs (MAR) over \$1000, the Contractor will be reimbursed for incurred costs  
27 on a non-fee bearing basis. The Contractor shall report maintenance and repair  
28 costs in a separate Contract Line Item Number (CLIN), the MAR CLIN. The  
29 Contractor shall coordinate MAR purchase requests with NASA to accomplish  
30 the repairs in a cost effective and prompt manner.  
31

32 The Contractor shall utilize in-house labor to the fullest extent possible to effect  
33 repairs of IAP under \$1000 per repair.  
34

35 The Contractor shall establish maintenance, repair, service agreements and  
36 calibration agreements/subcontracts for the operation and maintenance of PWS  
37 Section 8.1.1 equipment at VAFB that is identified in Appendix X.  
38

### 39 **8.1.2 Maintenance Management**

40

41 The Contractor shall provide maintenance management services and implement a  
42 comprehensive proactive maintenance program incorporating the Reliability-  
43 Centered Maintenance (RCM) philosophy for assigned facilities, systems, and  
44 equipment, as described in NPR 8831.2 (as revised), Facilities Maintenance and  
45 Operations Management. Implementation of RCM program shall ensure  
46 continued operations for mission support and long-term Government asset

1 protection and prevent the consequences of degradation and critical equipment  
2 breakdowns.

3  
4 The Contractor shall identify and document immediately upon discovery real  
5 time problems related to mission-critical and safety-critical facilities, systems,  
6 and equipment. The Contractor shall coordinate resolution with affected parties,  
7 including other contractors, to ensure effective responses and to provide  
8 mitigation. The Contractor shall provide a monthly report describing activities in  
9 this area as specified in DRD-XX, Facilities, Systems, and Equipment  
10 Maintenance Report to the Government.

11  
12 The Contractor shall demonstrate the condition of the assigned facilities,  
13 systems, and equipment through regular condition assessments provided to  
14 NASA as defined in DRD-XX, Facility Condition Assessment Report and DRD-  
15 XX, GSE Condition Assessment Report.

16  
17 On an annual basis, the Contractor shall review existing and proposed  
18 modification projects/new projects that cost in excess of \$50,000. The  
19 Contractor shall provide to the Government an up-to-date list of proposed capital  
20 improvement upgrades to facilities, as described in DRD-XX, Facility  
21 Modifications Design and Construction Plan. The items on the list shall be  
22 ranked in order of priority (as recommended by the contractor), and include  
23 estimated costs, year proposed, and rationale for submission and priority. The  
24 plan will adhere to the current version of NPD 8820.2, Design and Construction  
25 of Facilities. The Plan will include design costs for the proposed projects 2 years  
26 before the scheduled midpoint of construction date.

27  
28 The Contractor shall obtain approvals for work accomplished on VAFB facilities  
29 for which the Contractor has maintenance management responsibilities.

30  
31 The Contractor may be required to provide maintenance and repair in cases  
32 where the USAF Base Civil Engineering (BCE) services cannot be obtained in a  
33 prompt manner. See Appendix X for a list of maintenance responsibilities by  
34 facilities. In these cases services will be acquired through the MAR CLIN or  
35 fixed price task orders issued by the Government as specified in Section 2.1.

36  
37 The Contractor shall conduct a weekly facility planning meeting to review  
38 operations and maintenance activities affecting NASA facilities. The Contractor  
39 shall produce for this meeting a listing of pertinent operations and maintenance  
40 issues and a listing of active Base Civil Engineering work requests for review at  
41 this meeting.

### 42 43 **8.1.3 Sustaining Engineering**

44  
45 The Contractor shall provide sustaining engineering services to include safety  
46 analysis, configuration management, preparation and tracking of Engineering

Order and Engineering Support Request, reliability analysis, and maintainability analysis to ensure economical operations and maintenance of assigned facilities, systems, and equipment.

The Contractor shall release engineering documentation through the NASA KSC Technical Documentation (TechDoc) System and provide documentation to USAF Base Civil Engineering (BCE) for NASA VAFB equipment and facility modifications within 30 days of completion. The Contractor shall provide documentation available for review by the government IAW DRD-XX, Access to Contract Data – Released Drawing Revisions. In addition the Contractor shall acquire new engineering documentation generated by the USAF BCE for NASA assigned facilities and release the documentation in the NASA KSC TechDoc System within 30 days of receipt.

The Contractor shall operate the Computer-Aided-Design (CAD) System to maintain facility configuration drawings and communications equipment configuration documentation of special payload requirements.

The Contractor shall implement and maintain a facility handbook for NASA facilities at VAFB IAW the current version of LSP-UG-411.04, NASA-VAFB Facilities Reference Handbook. The Contractor shall submit a facility handbook IAW DRD-XX.

#### **8.1.4 Launch Site Operations Insight**

The requirements of this section shall be performed to provide Government insight into launch site operations to ensure resource protection of NASA LSP launch sites and associated processing support facilities.

The Contractor shall perform operational surveillance, facility inspections, and procedural reviews.

##### **8.1.4.1 Procedure Reviews**

The Contractor shall review integrated procedures classified as hazardous to ensure hazardous operations are identified and appropriate safety precautions are implemented. For non-NASA missions, the Contractor shall implement a risk-based structured sampling process for the review of hazardous procedures when processing takes place on NASA property or within NASA facilities. In both cases, the Contractor shall assess non-hazardous procedures through a risk-based structured sampling process to ensure proper classification. The Contractor's procedure review shall identify critical processes, potential/actual hazards, risks, and provide alternatives to eliminate control or reduce hazards to acceptable levels as defined by EWR 127-1, AFSPCMAN 91-710, or KNPR 8715.3. The Contractor shall provide the technical interchange with the Government to

communicate significant issues. The Contractor shall produce supporting products IAW DRD-XX.

#### **8.1.4.2 Surveillance**

The Contractor shall establish and perform risk-based structured safety surveillance and assessments of commercial launch provider and spacecraft customer operations that are classified as hazardous or critical for NASA LSP missions/activities and for non-NASA missions when processing takes place on NASA property or within a NASA facility. Structured surveillance shall also be conducted on Commercial Launch Provider activities related to NASA facility and Ground Support Equipment (GSE) maintenance, modification, and constructions operations. The contractor shall provide assessments of the commercial launch provider and spacecraft customer compliance with applicable requirements of EWR 127-1, AFSPCMAN 91-710, and KNPR 8715.3. The Contractor shall identify and document immediately upon discovery of real time problems related to mission-critical and safety-critical facilities, systems, and equipment and immediately communicate any significant issues to the Government. The Contractor shall follow up with supporting products IAW DRD-XX.

#### **8.1.4.3 Inspections**

The Contractor shall conduct inspections of commercial launch provider facilities IAW Federal, State, and local requirements. The contractor shall support and participate in, when requested, Facility Inspections of NASA facilities operated and maintained by the Commercial Launch Provider. The Contractor shall review the facilities inspection data for use in assessing the overall program compliance with applicable requirements contained in EWR 127-1, AFSPCMAN 91-710, or KNPR 8715.3 (as revised). The Contractor shall demonstrate the condition of the facilities, systems, and equipment through regular inspections and condition assessments. The contractor shall provide the technical interchange with the Government to communicate any significant issues. The contractor shall produce supporting products IAW DRD-XX.

#### **8.1.4.4 Reviews and Working Groups**

The Contractor shall participate in NASA, LSP, and the Commercial Launch Provider meetings/reviews, including status meetings for non-NASA missions and other processing and construction operations reviews associated with NASA or the commercial launch provider facilities. The Contractor shall provide, when requested, briefings and/or presentations in support of these meetings or other meetings as required to communicate general safety, operational/processing issues and/or contingency/mishap

information. The contractor shall provide the technical interchange with the Government to communicate any significant issues. The contractor shall produce supporting products IAW DRD-XX.

## **8.2 Base Operations Services**

### **8.2.1 Administrative Support**

The Contractor shall provide reproduction services and operation and maintenance of reproduction equipment. The Contractor shall report reproduction equipment usage and problems monthly.

The Contractor shall provide U.S. Postal Service and VAFB internal mail pickup and delivery.

The Contractor shall coordinate NASA personnel, spacecraft customer, and Contractor telephone requirements, change requests, and trouble reports with the USAF 30th Communication Squadron.

The Contractor shall obtain photo and video services from the USAF 30th Visual Information Flight and provide coordination to satisfy NASA personnel, spacecraft customer, and Contractor photo and video requirements.

### **8.2.2 Conference Room Equipment**

The Contractor shall input and coordinate scheduling requests for Video Teleconferencing Systems (ViTS) locations and serve as a scheduling point of contact for ViTS conferences scheduled by other centers. The Contractor shall set up and activate LSP ViTS according to the system conference schedule. The Contractor shall operate the ViTS during television conferences.

The Contractor shall schedule, prepare, operate and maintain LSP conference rooms and related presentation equipment for use as requested at VAFB.

### **8.2.3 Graphics Services**

The Contractor shall provide computer and manual graphics (drafting). This shall include, but not be limited to facility and equipment illustrations, organization charts, certificates, photography, guest badges, and guest bus placards.

### **8.2.4 Transportation Services**

The Contractor shall manage transportation services to meet operations requirements to include, but not limited to spacecraft servicing equipment on site at VAFB. The Contractor shall maintain the special skill certifications to drive

tractor/high pressure gas tube bank trailer truck and to transport hazardous material/wastes.

The Contractor shall provide maintenance/repair coordination services for the GSA vehicles assigned to the NASA Resident Office.

The Contractor shall provide transportation services for assembly, setup, moving, and reconfiguration of facility furnishings.

#### **8.2.5 Shipping and Receiving**

The Contractor shall provide services to include shipping, receiving, packing and crating, pickup and delivery of supplies, materials, equipment, and flight hardware. The Contractor shall receive mail, packages, and truck shipments, check for damage, and notify end user of its arrival. The Contractor shall provide shipment services including overnight and point-to-point package delivery.

#### **8.2.6 Janitorial Services**

The Contractor shall provide janitorial services in administrative office and operational areas excluding Clean Rooms and maintain assigned areas safe, orderly, and clean. The Contractor shall provide additional janitorial services during launch campaigns and working group meetings.

The Contractor shall respond to requests for clean up and replenishment of supplies.

#### **8.2.7 Laboratory Services**

The Contractor shall operate and maintain gas-sampling equipment and obtain gas samples from tube bank trailers and K-bottles and coordinate chemical analysis from USAF Chemical Laboratory at VAFB.

#### **8.2.8 Non-Destructive Evaluation (NDE) Services**

The Contractor shall provide test and inspection services including in NDE. The Contractor shall provide a written report detailing inspection results, as noted in DRD-XX, Access to Contract Data, NDE Report.

The Contractor shall perform non-destructive evaluation of handling equipment after structural modification and proof-load testing. The dye penetrant inspections shall be IAW American Society for Testing and Materials Standard Practice for Liquid Penetrant Examination (ASTM E 1417). Personnel performing the evaluation shall be trained IAW American Society for Nondestructive Testing (ASNT) documents ASNT CP-189 “Standard for

Qualification and Certification of Nondestructive Testing Personnel” and SNT-TC-1A “Recommended Practice for Personnel Qualification and Certification in Nondestructive Testing.”

### **8.3 Security Services**

The Contractor shall manage services and equipment required for security, access permits/badges, and locksmith services. The Contractor shall operate and maintain a system for making and issuing personnel picture badges for Contractor and subcontractor personnel. The Contractor shall seek approval from the USAF and NASA for the badge design. The Contractor shall actively participate in the FPCON and INFOCON activities at VAFB.

The Contractor shall provide and implement DRD-XX, Security Plan for services and equipment for security, access permits/badges, and locksmith services.

#### **8.3.1 Permits and Badges**

The Contractor shall provide area access permits/badges for Contractor employees, temporarily assigned customers, foreign nationals and other visiting personnel for access to payload or flight hardware processing areas. The Contractor shall maintain records of badges issued and account for the non-issued badge stock, as noted in DRD-XX, Access to Contract Data—Permits and Badges. The Contractor shall ensure that personnel requesting an access badge have received the appropriate safety training required for the corresponding location to be visited.

The Contractor shall provide controlled area permits/badges/entry authorization lists, DRD-XX, Access to Contract Data—Authorization Lists, when required by spacecraft customer projects within NASA facilities assigned to the Contractor. The Contractor shall verify that personnel obtaining permits, badges, or inclusion on an entry authorization list meet the requirements for unescorted access within the controlled area.

The Contractor shall provide badge requests for Contractor personnel for access to USAF restricted areas.

#### **8.3.2 Lock and Key Control**

The Contractor shall provide lock and key control including periodic inventory of keys in the NASA/VAFB master key system, changing lock combinations, and maintaining key control records, DRD-XX, Access to Contract Data—Lock Control Records, for facilities where the Contractor has operations and maintenance management responsibility.



### **8.3.3 Security Inspections**

The Contractor shall provide end-of-workday securing inspections for NASA-assigned facilities specified in Appendix X and log security inspection efforts, as noted in DRD-XX, Access to Contract Data—Security Inspection Log.

### **8.3.4 Guest Services**

The Contractor shall receive/screen requests for visits and process/maintain records of visit requests and authorization letters. Records of visit requests and authorization letters shall be maintained IAW DRD-XX, Access to Contract Data—Guest Requests. The Contractor shall coordinate with VAFB entry control personnel IAW USAF regulations to ensure credentials are ready when the visitor arrives. The Contractor shall be prepared to resolve and expedite entry control problems with VAFB security officials.

The Contractor shall develop and maintain visitor control lists as required for access to specific areas controlled by USAF and other Contractors.

## **8.4 Mission-Direct Support at VAFB**

### **8.4.1 Payload Support**

The Contractor shall provide transportation services for spacecraft and ground support equipment.

The Contractor shall provide transportation and setup services for support equipment including the Spacecraft Operations Utility Trailer and Launch Site Support Trailer as specified in LSP-UG-411.05/K-ELV-11.3, Launch Site Support Trailer Users Guide. The Contractor shall coordinate transportation and setup services with Communications and Telemetry personnel.

For Pegasus missions, The Contractor shall operate, maintain, and setup the Spacecraft Close-out Shelter (SCS) as specified in LSP-UG-411.03, Spacecraft Close-out Shelter Operations and Reference Guide.

### **8.4.2 Clean-Room Services and Cleanliness Requirements**

The Contractor shall prepare a Facility Contamination Control Plan using KPL-PLN-50007, KSC Facility Contamination Control Requirement Plan as a guideline (DRD-XX). The Contractor shall ensure that Bldg. 836 Lab 1 clean-room and clean work area facilities and associated support equipment meet spacecraft customer cleanliness requirements. The Contractor shall manage clean room operations and ensure customers follow established contamination control procedures. The Contractor shall report facility environmental measurements IAW DRD-XX.

The Contractor shall provide complete and thorough cleaning of the Clean Rooms in preparation for moving flight hardware into the facility. The Contractor shall provide assistance to customers in cleaning equipment prior to moving the equipment into the clean room.

The Contractor shall operate and maintain clean room particle counting equipment.

The Contractor shall implement spacecraft customer-produced contamination control plans. In the event the spacecraft customer does not have a written contamination control plan, the Contractor shall coordinate/implement contamination control requirements with the spacecraft customer.

The Contractor shall obtain certification of clean rooms by nationally recognized professional certifying authority prior to arrival of a payload requiring certified clean rooms to a PPF, but no more than annually.

The Contractor shall make system parameter changes as requested by flight hardware customers to include, but not limited to changes in temperature, air flow rate, and relative humidity. The Contractor shall provide written reports and records of FMS-recorded parameters. The Contractor shall monitor the FMS continuously whenever flight hardware is present.

## **8.5 Environmental Compliance**

The Contractor shall ensure that NASA operations at VAFB are compliant with applicable federal, state, county, NASA, and VAFB environmental rules, regulations, and management plans. The Contractor shall maintain an environmental management program that closely interfaces with NASA and the USAF environmental management efforts. The Contractor shall act as the technical point-of-contact (POC) and maintain a cooperative working relationship with USAF who has environmental compliance responsibility over operations at VAFB. The Contractor shall coordinate with USAF and NASA prior to contacting a regulatory agency related to environmental issues.

The Contractor shall keep NASA informed of environmental issues affecting NASA operations. The Contractor shall represent the NASA position in environmental meetings/working groups and provide to NASA evaluations/recommendations about the USAF position. The Contractor shall work with the USAF to resolve discrepancies identified by environmental agencies.

The Contractor shall provide environmental services to NASA for environmental programs. Services include technical regulatory consultation for interface with regulatory agencies; inspection of regulated facilities and systems; preparation of

1 permits, reports, and other regulatory documents; and development and review of  
2 environmental documentation.

3 The Contractor shall maintain an awareness of changing regulatory requirements to  
4 avoid citation for an environmental deficiency. The Contractor shall support USAF  
5 Environmental Safety and Occupational Health Compliance Assessment Management  
6 Program at VAFB and other audit/oversight programs. The Contractor shall  
7 participate in environmental incident investigation boards.  
8

9 The Contractor shall coordinate with USAF proposed new activities that may have  
10 environmental impact including facility modification, construction, or hazardous  
11 operations. The Contractor shall comply with USAF VAFB environmental impact  
12 analysis process (AFI 32-7064, Integrated National Resources Management). The  
13 Contractor shall ensure spacecraft customers and construction contractors working in  
14 NASA facilities meet environmental compliance requirements. The Contractor shall  
15 provide oversight and inspection to ensure spacecraft operations performed in NASA  
16 facilities meet environmental compliance requirements.  
17

18 The Contractor shall monitor Air Force environmental remediation activities in and  
19 around NASA facilities and determine their nature, scope, and schedule. The  
20 Contractor shall report these activities to NASA and determine if there is potential  
21 impact to ongoing and planned NASA activities.  
22

23 The Contractor shall comply with applicable federal, state, county, local, and  
24 territorial statutory and regulatory environmental requirements, including VAFB  
25 unique procedures, and Executive Orders applicable to NASA operations at VAFB.  
26 Orders involved include the following: energy efficiency, water conservation,  
27 hazardous materials usage reduction, hazardous waste generation reduction,  
28 environmental management systems, alternative fueled vehicles, protection of cultural  
29 and natural resources, environmental justice, and pollution prevention.  
30 Environmental media covered include the following: air pollution, wastewaters, solid  
31 and hazardous waste, storage tanks, pesticides, threatened and endangered species,  
32 storm water, drinking water, historical and archaeological resources, and any other  
33 applicable at VAFB.  
34

35 The Contractor shall provide environmental services to NASA VAFB operations  
36 including:

- 37 • Written evaluation and assessment of projects for requirements of the National  
38 Environmental Policy Act (NEPA).
- 39 • Preparation of NEPA documentation, e.g., Environmental Assessments,  
40 Environmental Impact Statements.
- 41 • Written evaluation of processes to determine permitting requirements and  
42 preparation of permit applications when identified.
- 43 • Ensure environmental permits are current and operations are in compliance  
44 with permit requirements. Written recommendations for corrective action to  
45 correct non-compliances.

- Preparation and delivery of reports to meet regulatory deadlines, e.g., permit compliance reports, Emergency Planning and Community Right-to-Know Act (EPCRA) reports, Toxic Release Inventory (TRI) reports, etc.
- Inspection of regulated facilities and systems for compliance in media areas. Written recommendations and track corrective action for identified non-compliances.

The Contractor shall be thoroughly familiar with federal, state, and local laws, rules, policies and regulations concerning environmental requirements:

- Review of current laws, rules, policies and regulations to ensure compliance.
- Review of proposed laws, rules, policies, and regulations to determine potential impacts to NASA operations and provide written record of review findings.
- Provide written comments and recommended revisions to NASA.

The Contractor shall participate on environmental committees as assigned by NASA and provide reports to NASA.

The Contractor shall be responsible for management of hazardous materials throughout their life cycle at VAFB – procurement, usage, and disposal including but not limited to:

- Obtain approval from USAF VAFB for use of hazardous materials.
- Maintain records of storage and usage for emergency management purposes and EPCRA and TRI reporting.
- Maintain material safety data sheets (MSDS) for hazardous materials used and/or ensure that MSDS are given to central location.
- Ensure safe storage and use of hazardous materials including development of operational procedures for storage, use, and disposal.
- Control, package, and process hazardous and controlled wastes generated during NASA operations IAW VAFB, federal, state and local procedures and regulations.
- Provide training to NASA personnel, contractors, and customers concerning the handling and use of hazardous materials and wastes to meet Federal, state, and local training requirements. Maintain the training records in a manner compliant with Federal, state, and local requirements.
- Develop and maintain a Spill Prevention and Countermeasures Plan.
- Coordinate activities with the USAF VAFB asbestos program officer to ensure the proposed operations are permitted, that personnel are trained, and that mitigation measures are in place.
- Identify and label electrical equipment with the potential to contain Polychlorinated Biphenyls (PCB). The Contractor shall process PCB-containing devices IAW federal, state, and local regulations.
- Identify construction, renovation, or maintenance efforts where lead-based paint may be present or potentially disturbed or impacted. The Contractor

shall coordinate activities with the USAF VAFB lead-based paint program officer, and ensure that personnel are trained.

- Manage potential pathogenic hazards in NASA facilities. The Contractor shall identify potential pathogenic hazards in NASA facilities and determine mitigation measures to be taken and coordinate such activities with VAFB 30th Aerospace Medicine Squadron Bioenvironmental Engineering Flight.

## **9.0 Information Technology (IT Support)**

### **9.1 Generic IT Services**

The Contractor shall provide Information Technology (IT) services as detailed below for LSP IT equipment. IT services include operation and maintenance of servers, workstations, networks, and software. IT services also includes Contractor development and maintenance of application and server based software. LSP IT equipment is defined as IT equipment which LSP owns or operates under the Program's IT security plans. IT security controls and oversight applies to IT equipment that the Contractor owns but connects to NASA networks, or that the Contractor owns but uses to store NASA data. IT equipment may include workstations, servers, networks, and software and IT related, commercially provided services. The Contractor shall designate an IT Security Auditor and an independent IT System Administrator for LSP IT equipment.

### **9.2 IT Security**

The Contractor shall support and implement the required IT security controls for LSP owned IT equipment under the policy and guidelines set by the TICCB. The Contractor shall support TICCB IT security meetings and shall provide experience and lessons learned towards the continuous improvement of LSP's IT security posture. The Contractor shall establish service agreements and working relationships with other NASA contractors to coordinate IT security controls on systems that connect to LSP owned IT equipment. The Contractor shall deliver a policy which describes how the Contractor will implement the current version of LSP-PD-120.06, LSP IT Security Policy IAW DRD-XX.

### **9.3 Servers**

The Contractor shall provide installation, operation, and maintenance services as required for servers that are part of LSP IT equipment. The Contractor shall repair or replace hardware components to ensure reliability and availability of service. The Contractor hardware and software licenses and maintenance agreements shall be current and valid. These servers include but are not limited to file servers, application servers, database servers, and web servers.

**9.4 Workstations**

The Contractor shall procure, install, and maintain required special purpose workstations that are part of LSP IT equipment. This support shall include hardware and software as required. The Contractor shall provide help desk support for users of these workstations. These workstations include but are not limited to Windows workstations, Apple Mac workstations, or Linux workstations.

**9.5 Networks**

The Contractor shall procure, install, and maintain LSP IT networks that are part of LSP IT equipment. This support shall include continuous monitoring, log auditing and other steps as part of a proactive approach to service reliability. The Contractor shall coordinate with other networking organizations that interconnect with LSP IT networks to ensure the required quality of service.

**9.6 Software Development**

The Contractor shall develop, install, and maintain custom software as required. Custom software projects shall be initiated, prioritized, monitored, and accepted by the TICCB. The Contractor shall comply with NASA software engineering policy as directed by the TICCB. The Contractor shall comply with the established software change and management process in the current version of LSP-P-432.02, LSP IT Engineering Change Request Process (ECR).

**9.7 Budget Planning**

The Contractor shall deliver to the TICCB an IT buy plan that projects the life-cycle and expected replacement times for existing hardware, software, and maintenance agreements for the LSP IT Buy Plan IAW DRD-XX.

The Contractor shall plan, procure, and manage the inventory of IT equipment, software, supplies, licenses, and services. Monthly reporting shall be required IAW DRD-XX, List of Purchases for Information Technology Acquisition Plan (ITAP) and Mission Focus Review (MFR) 137.

**10.0 Vehicle Engineering**

The Contractor shall perform engineering and analyses for the NASA LSP. The Contractor shall review and evaluate commercial launch provider tasks and products delivered as part of expendable launch vehicle launch service to enable NASA LSP to provide approval of mission specific items and a knowledgeable “go/no-go” for NASA missions as specified in the current version of NPD 8610.23, Launch Vehicle Technical Oversight Policy. The requirements in Section 10.0 apply in entirety to Sections 10.1, 10.2, and 10.3.

The Contractor shall evaluate the commercial launch provider's launch vehicle systems design, analyses, manufacturing, verification, validation, assembly, integration, testing, checkout, and launch preparations for compliance with applicable requirements and robustness in the areas of performance, safety, reliability, and quality. The Contractor shall assess both core vehicle and mission specific items implemented by the commercial launch provider as part of the LSP launch service for compliance with applicable interface control documentation, industry best practices, NASA launch service contract technical requirements, and the commercial launch provider's own internal design and qualification guidelines/specifications. The Contractor shall document the results of the evaluations, identify perceived deficiencies, and recommend corrective actions. Technical evaluations and assessments specified in Sections 10.0 thru 10.3 shall be provided by the Contractor using the current version of LSP-P-321.01, LSP Engineering Review Process (ERP), LSP-PLN-353.01 (as revised), Launch Services Program Risk Management Plan, LSP Monthly Status Review, LSP Risk Reviews, LPS Division/Office Meetings, and technical reports delivered to LSP. As required, the Contractor shall prepare and deliver technical briefings to spacecraft and launch vehicle external review teams. In addition, the Contractor shall provide informal technical interchange with LSP to provide status and immediately communicate significant issues. By identifying significant issues that could potentially impact mission success, schedule milestones, and cost, the Contractor's communications shall enable LSP to resolve the technical issues and risks associated with the launch service.

IAW the requirements for technical evaluations, assessments and interchange, the Contractor staff shall reside at KSC except as specified in Section 10.3.

The Contractor shall have the ability to investigate and evaluate the design, modification, development, and implementation of launch vehicle systems, ground support systems and equipment at commercial launch provider and payload processing facilities and launch complexes used to provide LSP launch services to LSP. The Contractor shall review, evaluate and provide an assessment of launch vehicle systems where LSP identifies a requirement for technical insight into the development, design, manufacturing, testing, integration, and launch of the affected systems and launch vehicle.

The Contractor shall participate in commercial launch provider run reviews and spacecraft customer reviews, which are chaired by NASA LSP personnel, in order to provide technical evaluations and recommendations of the designs, analyses, manufacturing methods, tests, and operations presented at those technical meetings. The meetings include but are not limited to Technical Interchange Meetings (TIM), Mission Integration Working Groups (MIWG), Preliminary Design Reviews (PDR), Critical Design Reviews (CDR), Design Certification Reviews (DCR), Quarterly Program Reviews (QPR), Payload Planning Meetings, Payload Ground Operations Working Group (GOWG), Safety Review Meetings, Flight Readiness and Launch Readiness Reviews. Prior to attending the review, the Contractor shall review

1 available requirements, specifications, and drawings as they relate to the existing  
2 configurations and the proposed design. The LSP review chairman shall be informed  
3 of items reviewed in preparation for the review and potential issues that may arise  
4 during the review. After the review, the Contractor shall document in a timely  
5 manner an assessment of the proposed design and its ability to meet performance,  
6 producibility, and schedule requirements, including identification of risk for LSP's  
7 management of the risk.

8  
9 The Contractor shall review, evaluate, and provide technical assessment of  
10 commercial launch provider documents delivered as part of the integration of each  
11 LSP missions to enable NASA to approve items specified in the launch service  
12 contracts (e.g., commercial launch provider deliverables, MIWG minutes and action  
13 items). The Contractor shall be well versed in analyses methodologies used by  
14 commercial launch providers. For assessments of commercial launch provider  
15 deliverables, for assigned missions/tasks, the Contractor shall provide communication  
16 to the LSP Mission Integration Team to include a summary of the commercial launch  
17 provider's deliverable reviewed, rationale for agreement or disagreement, ground  
18 rules used for Contractor analysis performed, results and sound explanation which  
19 corroborate Contractor analytic results, final conclusions and recommendations, and  
20 identification of risk and risk rating IAW the current version of LSP-P-333.09, LSP  
21 Mission Specific Contract Data Requirements List Review & Approval. At a  
22 minimum, the Contractor shall identify significant issues that could potentially impact  
23 mission success, schedule milestones, or cost for LSP resolution with the commercial  
24 launch provider.

25  
26 Throughout the life cycle of NASA LSP missions, from identification of mission  
27 requirements until completion of post-launch data review, the Contractor shall gather  
28 data from commercial launch providers and spacecraft customers as well as perform  
29 independent research. The Contractor shall evaluate and assess mission specific  
30 launch vehicle systems, mechanical and electrical interfaces, mission-specific  
31 software, predicted spacecraft environments, and commercial launch provider actions  
32 for NASA LSP missions. Contractor technical assessments shall be provided to  
33 NASA for NASA resolution with the commercial launch provider.

34  
35 Throughout the build cycle for the various launch vehicle fleets, from design  
36 requirements development until completion of post-launch data review, the  
37 Contractor shall participate in LSP and commercial launch provider technical  
38 activities and shall maintain a knowledge base adequate to ensure prompt, accurate  
39 and complete evaluation of flight and ground system technical issues or anomalies  
40 effecting NASA missions. The assessments shall include documentation of  
41 discrepancies, dispositions and corrective action plans. This requires knowledge for  
42 commercial launch provider systems utilized by the LSP, including knowledge of  
43 specific vehicles assigned to NASA and to non-NASA missions.

44  
45 For launch vehicles undergoing certification to the current version of NPD 8610.7  
46 Launch Services Risk Mitigation Policy for NASA-Owned and/or NASA-Sponsored



Spacecraft/Missions, the Contractor shall gather data from the commercial launch provider, perform their own independent research and analyses, and evaluate the launch vehicle IAW the current version of LSP document LSP-PLN-324.01, Expendable Launch Vehicle Certification, and the specific launch vehicle certification plan generated by LSP. The Contractor shall review, evaluate, and provide technical assessment of commercial launch provider documents delivered as part of the certification effort. The Contractor shall prepare Engineering Review Board packages and supporting reports which document the Contractor's evaluation of the commercial launch provider's compliance with the certification requirements. The Contractor shall participate in LSP ERB's, PRCBs, and other management or independent reviews to provide technical interchange with LSP on the Contractor's assessment of the commercial launch provider's compliance with the certification requirements.

The Contractor shall gather data, review telemetry, research requirements, review as-built documentation and as-run procedures, and perform investigative steps to prepare and present evaluations to NASA-chaired Mishap Investigation Board (MIB) meetings in the event of a failed mission. Evaluations of anomalies shall be presented to the LSP Engineering Review Board. The Contractor shall evaluate the failed or anomalous systems to enable NASA to direct or approve commercial launch provider corrective action plans and/or return-to-flight activities.

## **10.1 Mission Analysis**

The Contractor shall provide rapid, accurate, and complete assessments of analytical items throughout the life cycle for NASA LSP missions and build cycle for NASA vehicles. The Contractor shall perform reviews of commercial launch provider documents in order to ensure prompt technical assessments of relevant issues that arise during the integration process. Evaluation of these issues may require the Contractor to perform an independent analysis in order to verify or better understand the commercial launch provider data. Contractor documentation of evaluations and recommendations to LSP shall be as defined in Section 10.0 to enable NASA to approve analyses and/or provide direction to the commercial launch provider for corrective action. The analytical areas that shall be covered include but not limited to the following:

- Loads and Structural Dynamics
- Dynamic Environments
- Stress
- Flight Design
- Flight Software
- Controls and Stability
- Thermal/Thermodynamics
- Electromagnetic Compatibility
- Fluids/CFD/Aerodynamics

As specified in Section 10.0, the Contractor shall evaluate commercial launch provider analyses for compliance with applicable mission and vehicle requirements for the disciplines listed above to enable NASA LSP to provide prompt approval of mission unique items and a knowledgeable “go/no go” for NASA missions as specified IAW NPD 8610.23 (as revised) Launch Vehicle Technical Oversight Policy. The Contractor shall evaluate and provide technical assessments to LSP of the relevant commercial launch provider deliverables, vehicle system design, testing (such as that required for flight software or environments), robustness in the areas of performance and reliability, and post flight data.

For the disciplines listed, the Contractor shall perform a review of data and document this review as described in Section 10.0 for vehicle certification activities. Independent analysis, as directed by LSP, may also be required for certification.

Review and or analysis shall be performed as required for trade studies during the feasibility studies and advanced planning phases in support of future NASA spacecraft/programs. The Contractor shall document ground rules, recommendations and conclusions as described in section 10.0 for commercial launch provider deliverables.

For the disciplines listed above, specific technical expertise required by The Contractor shall include the ability to:

- Develop and create complex vehicle models
- Simulate these models using relevant code
- Modify or update analytical code as required
- Understand the commercial launch provider tools and models such that input and output files can be reviewed efficiently and accurately.
- Review incoming reports and perform analytical checks as required

Technical issues and data shall be communicated to the MIT as well as the appropriate teams that comprise the disciplines listed.

## **10.2 Vehicle Systems Engineering**

The Contractor shall provide rapid, accurate, complete assessment of vehicle systems issues and provide notification to the LSP Vehicle Systems Leads/ Integration Engineers and the LSP Chief Engineer IAW LSP-P-321.01 (as revised), LSP Engineering Change Request Process. As specified in Section 10.0, the Contractor is responsible for reviewing and evaluating commercial launch provider tasks and products to enable NASA LSP to provide prompt approval of mission unique items and a knowledgeable “go/no-go” for NASA missions as specified IAW NPD 8610.23 (as revised), Launch Vehicle Technical Oversight Policy. The Contractor’s vehicle systems engineers shall evaluate and provide technical

assessments of the commercial launch provider's launch vehicle systems design, analyses, manufacturing, verification, validation, assembly, integration, testing, checkout, and launch preparations for compliance with applicable requirements and robustness in the areas of performance, safety, reliability, and quality. The Contractor shall participate in and assess launch vehicle processing, spacecraft integration and testing activities at both the launch site and the spacecraft customer facilities (e.g., fit-checks, environmental testing, payload shock testing) to verify overall commercial launch provider compliance with test procedures and acceptability of test results. In addition, The Contractor shall evaluate and make recommendations on spacecraft mechanical compatibility drawings.

The Contractor shall provide expertise to include but not limited to:

- Electrical/Avionics Engineering: electrical wiring avionics boxes, guidance and control systems, vehicle instrumentation, vehicle telemetry, vehicle Radio Frequency (RF) systems vehicle power systems, data acquisition/handling systems and Ground Launch Control Software, and electrical ground support equipment.
- Mechanical/Fluids & Propulsion Engineering: structures, composite materials, payload adapters, mechanical separation systems, pneumatics systems, hydraulics systems, liquid and solid propulsion systems, ordnance systems, ground support equipment, and contamination control methods.
- Systems engineering and integration support.

#### **10.2.1 Electrical/Avionics Engineering**

The Contractor shall assess flight and ground commercial launch provider electrical and avionics systems for LSP's determination of readiness for launch. The Contractor shall determine failure trends of components and investigate latent defects.

The Contractor shall assess mission unique requirements imposed on the design, modification, development, implementation, and flight performance of electrical and avionics systems.

The Contractor shall participate in, and assess launch vehicle processing, spacecraft integration and testing activities at both the launch site and at spacecraft customer facilities (e.g., fit-checks) to verify overall commercial launch provider compliance with test procedures and acceptability of test results.

The Contractor shall document evaluation and engineering analyses of the commercial launch provider existing and proposed ground launch control systems and verification of Flight Constants and Flight Program loads into the launch control system flight buffers.

The Contractor shall review the launch control system software configuration and changes to that configuration. The Contractor shall review ground software change and configuration management processes and document significant changes to those processes. The Contractor shall verify and document test documentation satisfies requirements throughout the launch control system. The Contractor shall verify the software configuration of the launch control system is correct for the operations being supported, when applicable, this extends to the configuration of the flight software and supporting mission constants.

The Contractor shall assess data from powered launch vehicle tests, and perform telemetry and flight/ground instrumentation analyses.

### **10.2.2 Mechanical/Fluids & Propulsion Engineering**

The Contractor shall assess flight and ground mechanical and structural systems for LSP's determination of readiness for launch. The Contractor shall determine failure trends of components and investigate latent defects.

The Contractor shall review and assess mission unique requirements imposed on the design, modification, development, implementation, and flight performance of mechanical, fluids, and propulsion systems.

The Contractor shall participate in and assess launch vehicle plans for compliance with mission cleanliness requirements in processing facilities, during transportation and spacecraft/launch vehicle integration, and fairing environments. The Contractor shall provide expertise in materials utilization/compatibility with mission unique requirements according to contamination control plans.

The Contractor shall perform assessment of data from component, system, and launch vehicle tests and flight.

### **10.2.3 Electronic Drafting**

The Contractor shall provide electronic drafting capability to create, design and maintain 2-dimensional (2D) and 3-dimensional (3D) drawings (I-DEAS, ProE, Autocad, Microstation, etc.). The Contractor shall develop and maintain diagrams, schematics, modeling for accessibility and/or feasibility assessments for mission integration requirements and launch vehicle systems, as noted in DRD-XX, Access to Contract Data—Electronic Drafting Products. The Contractor shall provide diagrams, schematics and modeling studies as part of the LSP Engineering Review Process and the Mission Integration activities. The Contractor shall provide results on hard copy and electronically to LSP.

## **10.3 Resident Offices**

1 The Contractor shall provide on-site representation at the NASA commercial launch  
2 provider resident offices in order to maintain insight into the commercial launch  
3 provider's facilities, and a knowledge base adequate to ensure prompt, accurate and  
4 complete technical assessment of issues and anomalies that arise in the required  
5 commercial launch provider facilities. The primary commercial launch provider  
6 facilities requiring representation are Decatur, Alabama; Denver, Colorado; and  
7 VAFB. Locations that may require representation include Chandler, Arizona;  
8 Hawthorne, California; Dulles, Virginia; and other locations as new commercial  
9 launch providers are identified.

10  
11 The Contractor shall review and evaluate commercial launch vehicle tasks and  
12 products providing documentation and notification to NASA LSP to facilitate prompt  
13 approval of mission unique items and a knowledgeable “go/no-go” decision for  
14 NASA LSP missions as specified IAW NPD 8610.23 (as revised), Launch Vehicle  
15 Technical Oversight Policy. The Contractor at the Resident Offices shall evaluate  
16 and provide technical assessments of the commercial launch provider systems design,  
17 analyses, manufacturing, verification, validation, assembly, integration, testing,  
18 checkout, and launch preparations for compliance with applicable requirements and  
19 robustness in the areas of performance, safety, reliability, and quality.

20  
21 The Contractor shall provide expertise in the following areas: systems engineering,  
22 electrical engineering, mechanical engineering, structures engineering, propulsion  
23 engineering, and integration engineering.

24  
25 In the Contractor's area of technical expertise, and in addition to the requirements  
26 specified in Section 10.0, the Contractor shall:

- 27 • Develop and maintain insight into the commercial launch provider  
28 engineering and operations through daily contact with peers throughout the  
29 commercial launch provider organization.
- 30 • As identified through the other elements of the performance requirements,  
31 coordinate and perform technical interchange with LSP Engineering  
32 Directorate counterparts on Engineering Review items, Project Risk items,  
33 and incoming commercial launch provider documents.
- 34 • Participate in reviews and meetings at the commercial launch provider  
35 location.
- 36 • Participate in selected reviews and activities at other locations (e.g., MIWG,  
37 Spacecraft-to-Vehicle Fit Check, commercial launch provider supplier product  
38 reviews).
- 39 • Participate in the NASA lead Launch Campaigns by directly participating in  
40 the LET or providing support to the LET from the resident office.
- 41 • Participate in Test Readiness Reviews, observe and report on development,  
42 qualification and/or other special tests at the commercial launch provider and  
43 commercial launch provider supplier locations. Provide technical assessments  
44 of the test activities.
- 45 • Perform independent investigations in order to identify and report to the  
46 NASA LSP resident office members items with risk implications for NASA's

1 use of the commercial launch provider's launch service. Investigations shall  
2 include but not be limited to manufacturing and/or design trend studies,  
3 facility walk downs, and hardware walk downs.

- 4 • Systems engineering expertise shall be cross-utilized thru technical  
5 interchange with the NASA LSP and the NASA members at other resident  
6 office locations.
- 7 • Integration engineering expertise shall participate in the ICD development and  
8 verification matrix completion by providing technical evaluation of mission  
9 unique requirements and verifications for the LSP MIT resolution with the  
10 commercial launch provider.
- 11 • Participate in the development of new launch vehicles that are being certified  
12 IAW NPD 8610.7 (as revised), Launch Service Risk Mitigation Policy for  
13 NASA-owned and/or NASA-Sponsored Payloads/Missions.

#### 14 15 **11.0 IDIQ Facility Upgrade/Modification/Repair Design and Construction**

16  
17 The Contractor shall provide Architect-Engineer (A/E) services in support of LSP  
18 Construction of Facilities (Coff) projects that may include Preliminary Engineering  
19 Reports (PER), design packages, minor construction, modification/rehabilitation  
20 construction, and repair construction. These services shall include, but are not limited  
21 to engineering, project management, construction, supervision, inspection,  
22 documentation, and activation and validation as acquired through fixed price task  
23 orders issued by the Government.

24  
25 At VAFB, the Contractor may be required to provide maintenance and repair in  
26 particular cases where the USAF Base Civil Engineering (BCE) services (reference  
27 Appendix X) Facilities and Facilities Systems where the USAF support cannot be  
28 obtained in a prompt manner.

29  
30 These services will be acquired through fixed price task orders issued by the  
31 Government.  
32